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CALIFORNIA FRUIT CULTURE

IMPORTANT ESSAYS, DISCUSSIONS, REPORTS, ETC.

—AT THE—

Fifth Annual Convention of California Fruit Growers,

Held under the Auspices of the State Board of Horticulture,

—IN—

LOS ANGELES, NOVEMBER, 1885.

Practical Information on the growth of the Orange, Lemon, Fig, Apple, Plum, Peach, Pear, Apricot, etc., the destruction of Insect Pests, and other matters affecting the Fruit Industry.

OFFICIAL REPORT:

Reported by A. K. WHITTON, Stenographer, and furnished to the publishers by authority of the State Board of Horticulture.

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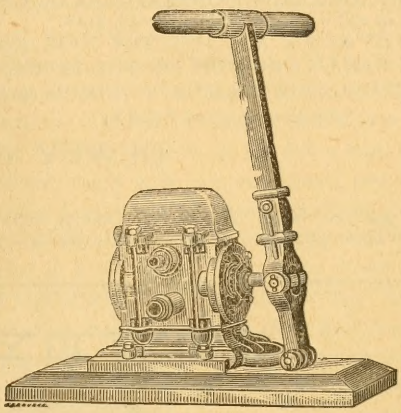

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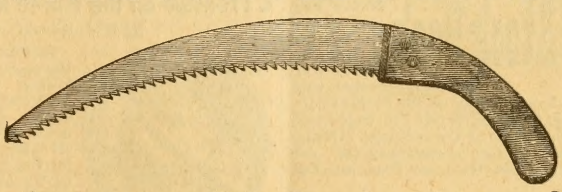

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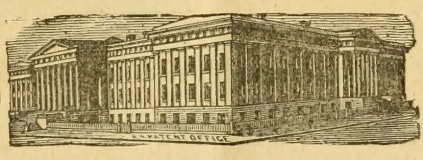
Scientific Press  Patent Agency.

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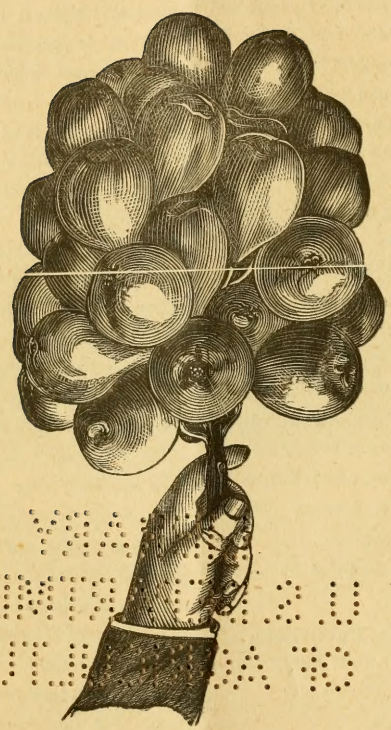

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FIFTH ANNUAL CONVENTION

OF

CALIFORNIA FRUIT GROWERS.

The convention met in the Grand Opera House, Los Angeles, at 10 A. M., Tuesday, November 17, 1885. Ellwood Cooper, President of the State Board of Horticulture, presided. A. H. Webb, Secretary of the State Board of Horticulture, was assisted by E. J. Wickson, Secretary of the State Horticultural Society.

Upon calling the convention to order President Cooper announced that Mr. Stephen M. White, who had been chosen by the Los Angeles citizens' committee to welcome the delegates to the city would deliver his address at the afternoon session. President Cooper then delivered his opening address as follows:

President Cooper's Address.

By reason of the position which I hold, as President of the State Board of Horticulture, it is expected of me to deliver an address on this occasion, and to mark out or submit a plan to govern our exercises at this convention, to point out the subjects of greatest importance, and the manner of discussion, so as to facilitate our work.

This will be the Fifth Annual Fruit-Growers' Convention held in this State. The law creating the State Board of Horticulture as it formerly stood did not authorize the incurring of any expenses for such purposes. Voluntary contributions were necessary to meet the outlay. Each convention had a separate and independent organization and adjourned *sine die*. While, as I said before, it is the fifth, it is the first over which the State Board assumes the control and that will have continuous organization. A complete record will be kept, and our office, the seat of information on every question that arises, will be accessible to all the fruit-growers in the State. The plan for our next annual convention, to be held in '86, will be determined here, so that much more possibly can be done at future gatherings than can be accomplished now.

Before submitting my plan, however, I will make a few introductory remarks on the subject of

Horticulture.

To quote from a lecture delivered by Baron Ferd. Von Mueller, in November, 1880, at the request of the Social Science Congress, of Melbourne, he said: "While Science is to shed light on the path of instructive progress to lead to the development of natural resources; Art to mold and refine æsthetics to react on the tone of social and domestic life; Literature a guiding influence on the progress of the times, on the welfare of the State; Economy to advance mutually the interests of the whole population —it is left to our gathering to advocate the vast interests involved in horticultural pursuits."

To quote still from that great man: "Directly or indirectly, man himself is nourished, clothed, and, indeed, provided with many of his other requisites by plants. The very implements of his daily avocation, the comforts of his home, the fuel for his hourly wants, the means of locomotion, the very paper without which his intellectual communication beyond he reach of voice would become an impossibility but for the offerings of the empire of plants. If the teachings and debates of our convention should tend to advance in any way the interests of horticultural pursuits, then we may claim to have aided in promoting the welfare of our own, and perhaps other communities."

A. Coutance, Professor of Natural Science, of Paris, in his elaborate work on the olive, compiled from the time of the most ancient records, states that the laws were made for the protection of wheat, the olive and the vine.

J. De Barth Shorb in an address delivered before the State Agricultural Society in September, 1882, said, "The history of agriculture is coincident with that of civilization itself, and so intimately blended that the study of one means necessarily the study of the other. * * * * Civilization depended on agriculture and climate. This carries the mind back to Egypt, the birth place of European civilization, 5000 years ago. This country, in many material respects, is similar to our own, and may be studied with interest and profit to us all, as it existed thousands of years before the Christian Era, and remains substantially the same to-day. What Egypt has been to European nations, California should be, and must become, to the American nation. Why was it that civilization

thus rose on the banks of the Nile, and not upon those of the Danube and Mississippi? The answer is, civilization depends upon climate and agriculture. As long as life is a scene of uncertainty, that the hopes of yesterday may be blighted by the realities of to-day, man, in the imperious demand for present support, dares not venture on speculative attempts for the purpose of ameliorating his condition. Agriculture in Egypt is certain, and there man first became civilized. Agriculture in California can be made as certain, and here man should develop a civilization and prosperity unequaled in this world's history. The arable land of Egypt is only 2253 square miles, and yet from this insignificant area were supported at one period over seven millions of people." Still quoting: "At San Gabriel, there are lands adjoining the old mission buildings which have been cropped twice a year since the foundation of the mission 110 years ago, and they still retain their fertility unimpaired. This is purely the result of irrigation."

I call your attention to this last paragraph as it is contrary to every theory as laid down in all the agricultural journals in the country. They claim that only by systematic fertilizing can the productive power of the land be secured. This is particularly claimed by French scientific journals, regarding continued fruit crops. The one great expense attending fruit production in that country is the fertilizers. The above claim is that only water is required.

It is not a difficult matter to write an address generalizing on the subject matter, but what we want is hard facts presented in the briefest and simplest manner. In what direction is our attention here to turn in horticulture, and in what aspects does it present itself to us?

The importance of horticulture in relation to educational training has never yet been sufficiently recognized. Our children should be taught in our common schools. Their observations enlarged, their interests enlivened. They should be made to feel their responsibility in the proper care of every useful plant. But very few people appreciate the difficulty to be surmounted in the conduct of an experiment. "Nature makes experimenters," says Professor Cassidy of Colorado. No man can be successful in this line of human effort who is careless, slovenly, and loose as a practitioner. The practice in the profession is largely the ability to measure details.

Subjects for Consideration.

The important subjects before this convention I have arranged or classed under four different heads, Nos. 1, 2, 3, 4. These again, with the exception of the fourth and last, I have subdivided in three different heads, first, second and third, as follows:

No. 1—Insect pests and the care of trees.

No. 2—The preparation, marketing and disposing of fruit.

No. 3—The variety and kinds of fruit trees to be encouraged.

No. 4—Protection to fruit industry.

Subdivisions of Nos. 1, 2, and 3.—No. 1—First, the most inexpensive remedies to apply for the destruction of insect pests, how to apply, the time to apply, and the cost. Second, the cultivation, the pruning, the time to prune. Third, proper laws to prevent the spread of insect pests. Number one in the order as given above will be disposed of on Tuesday. No. 2—First, the care in selection, the kind and size of packages, the marketing and shipping. Second, the proper time to gather the different kinds of fruits, the curing, etc. Third, how the fruit growers are to dispose of their fruits without coming in competition with each other as to prices for the same quality and kind of fruits. Number two will occupy all of Wednesday, including night session. No. 3—First, the best varieties of the different kinds of fruits to meet the wants of consumers in the different seasons. Second, the actual demand and probability of increase. Third, the encouragement to new planters to confine themselves to such fruits as are not in sufficient supply, or in excess, and to those that the consumption appears to be for the time being unlimited. No. 4.—The fourth class or subject (protection to the fruit industry) requires very careful consideration as every individual giving his views would naturally be biased in favor of his special line of interest.

You will see by this program that there are four general divisions of the subject. I propose that we take them up in their order, limiting or giving one day to each. The subdivisions of the classes Nos. 1, 2 and 3 can be arranged for the equivalent part of the day. The remarks of all the members to be limited as to time, unless by special privilege. This program will consume four days of our time. The fifth day I propose to give to the plan of preparation for our next annual convention.

Horticultural Books Recommended.

I have examined the proceedings of quite a number of horticultural societies held east of the Rocky mountains, and find in their discussions a very wide range of subjects. Our capacities, for climatic reasons, being very much greater and largely different suggests an independent scope and that we confine our deliberations more especially to such points as will increase or secure our greatest prosperity in the line of our natural advantages. Allow me, however, in this place to recommend that every locality procure for its public library a copy of the transactions of the Mississippi Valley Horticultural Society for 1884. In this book there is a register of every National and State Horticultural Society in the country. A copy of each can be secured, so that every citizen can have access to them.

These books or reports have papers on almost every imaginable subject kindred to fruit culture, with discussions on the same. I would also recommend a book published in Washington by the State Department, in June, 1884, No. 41½. This latter is especially interesting to those engaging in citrus or olive growing. If we expect to succeed in our fruit enterprises, we must read.

Insect Remedies.

Going back to my plan or program, which I have represented, I will briefly review some of the points or subjects before closing. No. 1, the first class—insect pests and care of trees: I would call your attention to the various bulletins that have been issued, giving the formula of certain mixtures, represented as efficient remedies for the destruction of certain insects. We have* the bulletin of B. M. Lelong, San Gabriel, Jan. 25, '85,—40 lbs. whale oil soap, 4 gallons coal-oil (110° fire test), 100 gallons water; cost, $2.84. For the black scale, spray in September and October; they hatch through July and August. My remarks regarding these different mixtures will be confined to their effect upon the black scale on olive trees. I have not experimented with other insects on citrus trees

sufficiently to make a report. The statement that they hatch through July and August is true, yet not strictly true, for the reason that I have known one year—1883—the hatching to begin early in July and hatch continuously up to the middle of the following February, a period of seven months. The bulletin of S. F. Chapin, Nov. 25th, 1884, gives this mixture, which contains five different ingredients besides the water. It is impracticable unless put up already for sale by some one who is prepared to do so in the exact proportions. The cost is two and two-thirds cents per gallon. It is too expensive, unless guaranteed, and the guarantee would depend upon the application or in whose hands it was made. I will state in this place that since writing the above, and during the time I was waiting for the steamer to come to Los Angeles, I examined some citrus trees, orange, lemon and lime that were badly effected with the black scale in May last. After two sprayings with the whale oil and iron compound, all the insects had disappeared before Nov. 13th.

The bulletin of Dobbins, Rice & McKinley, Los Angeles, Oct. 15, 1885, is as follows: 25 lbs. brown soap, 6 lbs. wood potash, 4 gallons coal-oil (110° test), 100 gallons water. This mixture would, I suppose, cost about two and one-half cents the gallon.

Matthew Cooke's remedy, copied from a Los Angeles paper in March last is as follows: 10 lbs. whale oil or other soft soap, sulphur 2½ or 3 lbs., coal-oil 1 gallon, water 17 gallons. Cost about three and a-half cents. All these mixtures are good, no doubt, and would kill the newly hatched or young scale, but how about the scale hatched after October? If we have to keep constantly spraying we had better use tobacco decoction which costs ten times less.

Kerosene oil has been considered by entomologists, the most effectual insect destroyer. The Agricultural Department at Washington has taken the same view, and has from year to year given directions how to mix and use. As a matter of course the greatest care must be exercised in preparation and application. I refer you to report of 1884, page 331. The experimenters seem to have arrived at the perfect solution. I have adopted their formula for emulsifying, but for the olive tree washing double the strength. The proportions in the bulletins of which I first made mention range from 15 gallons water up to 25 gallons, to one gallon of oil. The Government reports nine gallons of water to each gallon of the emulsions. In diluting the emulsion I only use six and one-half gallons water to each gallon of oil, and I use only the best quality of kerosene oil to be had in the market of (150° fire test). It mixes better, and is therefore safer in the application. The cost of my mixture is about four cents a gallon and it takes for large olive trees about 16 gallons on an average. The cost therefore per tree, not counting the labor, fuel, etc., is 64 cents each washing.

I experimented with the kerosene mixture in April, from 5th to 8th, with the strength of 14 to 1, and failed to see much benefit. At the same time, with the strength 6½ to 1, the trees were not injured and most of the scale killed. I had the same result on lime trees. At the same time I experimented with pyroligneous acid on the olive trees, each gallon of acid diluted with one gallon of water. The result was a perfect success, as every part touched in the spraying the insects were destroyed. The acid cost in San Francisco, including the barrels, 12 cents; the freight and wharfage to Santa Barbara about two cents, equal 14 cents the gallon; eight gallons of acid with eight gallons of water makes the cost per tree $1.12 each washing.

From July 29th to August 25th I gave my trees a thorough spraying with a decoction of tobacco; October 20th to November 10th, a thorough spraying with kerosene oil, each gallon diluted with 6½ gallons water. I also experimented between the last given dates with pyroligneous acid, spirits of turpentine and ice-water. The result of these experiments will be given at our subsequent convention.

My formula is: Five gallons best kerosene oil, 150° test; one and a fourth pounds good common soap, or one bar and a half of soap usually sold as pound packages; two and a half gallons of water. This makes the emulsion. When using dilute 6½ (to 7) gallons of water for each gallon of oil, and to this mixture add two and a half pounds of good home-made soap dissolved in boiling water. All this mixing is done with hot water. We usually have 140° in the tank from which we spray.

For the wooly aphis on apple trees I have had good success with caustic soda, at a very moderate cost.

For flowering shrubs or garden plants I would recommend sulphur and lime. Formula—two pounds sulphur, one pound lime, two gallons water; boil one hour. Dilute one gallon of the mixture with three gallons of water, or more water, according to the strength of the plant. The most important question with which we have to deal is remedies for the destruction of insects, and we should be very careful before recommending any remedy as certain in its operation.

Ravages of Insects.

In the address of Parker Earle, President of the Mississippi Valley Horticultural Society, delivered in January last, he stated that three-fourths of the entire apple crop were destroyed by insects. This seems like a terrible waste. In Santa Barbara county we certainly have not more than one-fifth of an olive crop gathered in any one year.

From another authority, B. D. Walsh, it is stated that the annual loss in the United States amounts to $300,000,000 from insect pests alone. From a report made by B. F. Johnson, of Champaign, Illinois, he states that the "chief cause of diseases in vegetation is mal-nutrition, and that, with proper surroundings, sufficient food and abundant water, orchards and all other trees will be healthy and fruitful." This theory is not borne out by our experience in semi-tropical trees. The "*Icerya purchasi*" is no respector of conditions in orange trees or any of the citrus family.

Under the second subdivision of the first subject I have mentioned, the cultivating and pruning of trees, I would remark concerning

The Pruning and Cultivation of Olive Trees.

That the pruning should be done immediately after the fruit is gathered. All dead wood should be removed, and vigorous thinning out on the inside of the trees, so as to admit the sunlight and air. This rule should apply to all trees. The cultivation should be thorough.

The top surface should be well stirred four or five times in the spring. Plowing is only necessary when the crust under becomes hard.

Anti-Insect Laws.

I come now to the third subject in the first class: "The laws to prevent the spread of insect pests." So far as I have been informed not one single test case has been made. In Santa Barbara county the *Icerya purchasi*, commonly called the white cottnoy cushioned scale, the worst of all insect pests known in this country or any other country, is gradually spreading and nothing done to prevent it. In the town of Santa Barbara a partial effort has been made. No legal steps have been taken to quarantine this most terrible pest. I cannot foresee the future regarding it, and am at a loss to advise. I fear it will cost the citizens of Southern California millions of dollars.

The second subject proposed is the

Marketing and Disposing of Fruit.

Fruits should be graded as to size, handled with great care, neatly packed in new and clean boxes or packages and artistically marked. The kind and size of package should be agreed upon and a bulletin issued by the Inspector, so as to be distributed pretty generally amongst the fruit-growers, giving also the cost of such boxes or packages in San Francisco.

How the fruit-growers are best to dispose of their fruits I pass over by simply calling attention to the discussion had some weeks ago in San Francisco (also on the 11th of this month), where a proposition was made to establish a central office or business house through which all the fruits were to be disposed of, each orchardist to be entitled to one share to each acre in fruit-bearing trees (on the 13th of November articles of incorporation wer filed), the variety and kinds of fruit to be encouraged. The third class I pass over for the present.

The fourth class,

Protection to the Fruit Industry.

I will state how it operates with regard to my business—making olive oil, growing almonds and English walnuts. We pay labor one dollar a day and board. The boarding costs us about 35 cents, say two francs; labor five francs, equal to seven francs. In the south of France and Italy they pay labor one franc; the boarding costs not over one franc, total, two francs; difference five francs, or equal to one dollar per day on every laborer employed.

The freight from San Francisco to New York on oil is $60 per ton; from the Mediterranean $15, or one-fourth, so that without an import duty, other things being equal, it would be better for me to proceed at once to Southern Europe to carry on my business. With walnuts and almonds we make the same comparison, except that the freight on these to New York is $40 per ton, and from south of Europe about half as much.

While I wish to avoid any political discussion at this meeting not pertinent to our actual demands or necessities, I will in this place state that if we want laws to protect and encourage the greatest prosperity of our State, we must as intelligent citizens look after the framing of them. We cannot plead indifferenoe, or preoccupation; we cannot ignore the community in which we live: our district, our county, our state or our common country.

We must look after the disbursements of our money. Our taxes are more and more every year, notwithstanding we have constantly ringing in our ears, honest administration, economy, retrenchment, etc., but no matter what party wins, it is still "more money." Take 1875 as the basis of value for my ranch. The first decade, or 1885, the increase (in taxes) is 70 per cent or 7 per cent yearly. There is nothing to warrant any such increase.

Tree Planting.

The most of you perhaps will remember that about ten years ago a law was passed by the Legislature to encourage tree planting on the public highways. No trees to my knowledge have been planted under that law, not because the amount to be given for each tree was insignificant, but because it was impossible to protect them. The framers of the law had not an intelligent idea of the subject. I think it is time to revive this most important necessity.

We ought to encourage forest tree planting for the protection of our fruit trees. It is my candid opinion based upon my experience that three-fourths of the area in fruit trees, with one-fourth in forest trees will produce more fruit and better fruits than the same area would without the forest trees.

Freight Rates.

Our freights are very much too high. I am satisfied that they can be reduced one-half, and still give a fair profit to the railroads. On the coast, where we have no railroads, we have suffered very greatly from the exhorbitant charges of the steamship company. Recently an opposition line has been established and the rates reduced in some instances to one-fourth the former charges. This reduction by the old company is manifestly or presumably so made in an effort to compel the new line to withdraw. In this connection I wish to call your attention to the New Constitution, Art. XII, Sec. 20, page 26:

> No railroad company or other common carrier shall combine or make any contract with the owners of any vessel that leaves port or makes port in this State, or with any common carrier by which combination or contract the earnings of one doing the carrying are to be shared by the other not doing the carrying.
>
> And whenever a railroad corporation shall, for the purpose of competing with any other common carrier, lower its rates for transportation of passengers or freight from one point to another, such reduced rates shall not be again raised or increased, etc.

Why single out a railroad company and not apply the same rule to all common carriers? Again, Declaration of Rights on Corporations, page 44, after defining corporations, forbiding pooling, etc., we find this clause—"Preventing the increase of railroad rates that have been reduced for purposes of competition."

Here we have the railroad singled out again. Why? Because the "hue and cry" against the railroad was popular. The politicians vied with each other to pile on restrictions as to the railroad, and possibly at the same time the paid agents of other common carriers. The spirit of justice did not reign. The omission or exemption as to other common carriers renders us helpless. I cannot help believing that it was intentional, and it should warn us of the danger of selecting our representatives. We must know whose interest they represent.

As I said before, we must demand reasonable rates of freight, and we should, in return, put our fruits on the market at the lowest possible prices that the business will warrant. This would cheapen the cost to the consumer and increase enormously the demand.

Solomon has said, "As a nail sticketh between the joinings of a stone, so sin sticketh between the buyer and seller." And while this does represent the general tendency of trade, we ought to come up to the high standard of the Golden Rule—"To do unto others as we would have them do unto us." "Let us consider those deeds the greatest which give new sources of comfort, both physical and mental, to mankind, and which harmonize the interests of all branches of the great family of man."

After delivering his opening address, President Cooper announced the first topic for discussion, "The Most Inexpensive Remedies to Apply for the Destruction of Insect Pests: How to Apply, the Time to Apply, and the Cost."

Dr. J. M. Frey, of Newcastle, Placer county: I have a small orchard in the northern part of the State, in Placer county, which is very much infested with insect pests of all kinds. The wooly aphis is almost probably the worst we have, and the red spider. I find that coal oil is the best remedy to use, so far as killing the insects, but we find it very liable to kill the trees. I found it necessary to make an emulsion which would thoroughly disguise the oil and do it in the cheapest possible manner. As I had a number of cows, and saw something in the paper about an emulsion of milk, I tried that, and I think I hit upon the cheapest plan, and easiest and safest manner of applying coal oil. I took about five gallons of skimmed milk and churned it with one gallon of coal oil. I found it good for killing the wooly aphis and the scale. It cleared my trees of the scale and wooly aphis, but it did not kill the red spider. To attack them I made a mixture of whitewash and salt, and whitewashed the trees and branches so far as I could get at them, but the branches ran out so small that to whitewash them took some little time. With these two simple remedies I have cleared out all the insects from my orchard. In packing my pears this last year I instructed my man to be very careful and pick out all the pears that were attacked by the scale, and I don't think that I had a bushel of pears that were so affected. A great many orchards around me are entirely ruined, and I think that my experience is worth something.

A Delegate: I would like to inquire what proportion of water was used in the emulsion.

Dr. Frey: I took five gallons of milk and one gallon of coal oil; to that I added eight gallons of water. Different trees will bear different remedies and of different strength. For instance, the olive is a very tough tree; you can give it twice the strength you put on the cherry tree. The peach is also a tree that is easily hurt; you have to be very careful with that, but on the apple, the plum and the quince you can put a pretty good strength and not be liable to hurt them. The whole thing is to be very careful not to have globules of kerosene floating on top of the mixture. You must make a perfect emulsion and then no harm will be done. The cherry tree, however, is very apt to be hurt.

Dr. O. B. Conger, of Pasadena: I suppose friendly criticisms are very proper to be made. I rise to criticise this remark that this gentleman has just made, that you must thoroughly make an emulsion or else the kerosene will have a bad effect. I would like to ask what the property is that does the work; is it the kerosene or the milk in the emulsion?

Dr. Frey: The kerosene, undoubtedly. It must still be in the form of kerosene, whether it is with milk or whale oil soap.

Dr. Conger: Now, to my mind, kerosene is a bad agent; or an agent, perhaps, that will do damage to the delicate foliage, so far as I have experimented with it. I have set it aside, from the fact of its penetrating the bark of the tree or the leaf. I can not say that I have seen direct injurious results from one application, but I suspect that if it is continued there will be harm arising from its use, from the fact of its penetrating, or liability to penetrate the bark and leaf of the plant. We all know that if you place it upon your hand it is readily absorbed like many volatile substances. It readily disappears in the wood of the tree. It spreads very rapidly and passes away from sight. Perhaps, to some extent, it evaporates; but I apprehend that it penetrates the bark and the leaf of the plant, and hence it must interfere with the circulation. Now, there is an erroneous opinion arisen in regard to making this emulsion, in my judgment. The people, in making the emulsion, imagine that when they have diluted it, it acts in some other way —not directly as kerosene, and there is the point that I rise to call attention to: that in whatever form it is used, it still acts as kerosene.

Mr. Williams, of Fresno: By mixing certain elements we sometimes destroy the deleterious effects of those elements. Now, by mixing with milk, as Dr. Frey suggests, does not the emulsion destroy the effect of the kerosene upon the live plants, and can we not preserve those properties in the kerosene that destroys the animal life and yet preserve our plant life?

Mr. L. J. Rose, of San Gabriel: As far as destroying the effect of the coal oil in emulsions is concerned, I think there is nothing in it. I think an emulsion is for the purpose of evenly distributing the coal oil on a tree. If there is no emulsion, why then it separates and keeps to itself and you are liable to spray your tree with nothing but coal oil, but an emulsion takes it up and distributes it evenly through a certain quantity of water or whatever you may spray with. I have sprayed a good deal in my time, and I believe that if you can get along without coal oil it would be better not to use it. It certainly kills, but it also injures the tree; if you use it as an emulsion that is the least injury, because you apply it so lightly to every part, but there is danger where you do it in large quantities, and leave these matters to other parties that they may not get a good emulsion, and even in the emulsion that I have I find that my trees have suffered to some extent. I believe that you will find where you have sprayed trees with an emulsion two or three times that some of the twigs are dead, that the leaves fall on some parts of the tree, that the tender green bark will be discolored, as will be found by cutting into it. I wish to call attention to a

matter that was brought to my notice on the cars by a gentleman whom I hope will be here, Mr. Thomas, of Visalia. He says he has has some wood with him that has been washed with a solution of brine—salt dissolved with water, as much as it will dissolve, and the tree washed with it for what is known as the San Jose scale. He told me it had killed all the scale on the tree and it afterwards had made a good growth, and it was entirely free from scale. So far as many remedies are concerned they are remedies that will apparently kill all or mostly all the insects on the tree, but so far as my experience goes I have not perfected anything. I have the same thing to deal with from time to time, and it is a continued labor. Now if we could get something that would do this and would absolutely destroy it so that we would be free from it, of course the benefits would be much larger. Whether this is possible or not I do not know. I have studied over this a good deal because it is my interest to study it. I have thought perhaps that some kind of odors, some kinds of gases, some kinds of fumigation under a tent, that would reach every part of the tree, would probably do the work. I have been in hopes that people who have more leisure would experiment with it and find out something in that direction, and I still hope that something will be found out that will be a better remedy than anything we have. Whether there is anything in this salt remedy or not, I do not know. The gentleman is here and he has some wood which I think would be interesting for the people to see.

Mr. Thomas, of Visalia: If you will permit me, in the afternoon I will bring those samples of wood before you and explain to you all I know about it. It is something I only discovered a few days ago in Fresno county. I gave it as severe investigation as I could. I only found one gentleman that used it, and I think it is a success, so far as that gentleman used it.

John Brittan, of San Jose: I suppose that I have had some experience in eradicating the San Jose scale. I do claim that I was the first man to use a remedy for it. I unfortunately bought an old orchard about the time that the scale became prevalent there. I got a pretty good dose of it—enough to keep me busy for three or four years. I started in on the basis of potash. I liked potash because there is nothing lost in using it, and if I spend $50 to put it on my orchard I think I get it back in the course of a few years. I have always considered that without potash you will not get very good fruit. That is a great question for fruit-growers to consider. The question of spending $50 and getting some of it back again in other ways besides destroying the insect is important. I adhered to my original plan, and I did exterminate on my orchard the San Jose scale. I started in on it some eight or nine years ago, and for the last two years I have not seen a sign of the scale, in fact I eradicated them so well that I have not washed for two years. I began using pure potash or concentrated lye by dissolving it in water and thoroughly drenching the trees. I did not confine myself to simply spraying them. I gave them all that I thought they ought to have, and I was not careful about saving it at all. I simply let it go onto the ground, and I found out that after continuing in that course of treatment for three years I began to get the better of the scale, and for the last two years I have not seen a sign of them in my orchard. I have an idea that if a tree has all the potash it wants that these insects can't destroy it. The potash seems to be an antidote for the poison that these insects inject into the tree. I have always based my theory that they did not destroy a tree by what they took from it, but by what they left therein. If you cut off the bark from a tree which is infested with San Jose scale, so that you can see the inside of the bark, you will find it all red, and that red extends right into the inner part of the tree. I find that by applying lye that after it had performed its work that red color will become extracted, come right out onto the tree and form a gum on the outside, and then the bark takes on its natural color again. I have had a tree so badly infested with the San Jose scale that it produced no leaves for two years, and yet that tree recovered and is standing a healthy tree to-day. I attribute it to the effect of the lye. I believe the lye destroyed the poison. I am perfectly satisficed it will destroy all insects. You can kill all the red scale on a tree, and if the tree does not get some remedy to overcome that poison, the tree will then die. I know that such has been the case in Santa Clara county. From my experience, therefore, I think that lye is the best remedy and that lye should be the basis of all washes. Tobacco water, as the President stated, is good because it contains more lye than any other wash that can be used. I consider that all washes should be based on potash, not only for the immediate effect, but for their beneficial effect afterwards.

Dr. Frey: How much water do you use to a pound of potash?

Mr. Brittan: I never have used the wash any stronger than one pound of concentrated lye to four gallons of water. I have experimented with it stronger, but I never used it so as a general thing.

A Delegate: Is the potash as good as the concentrated lye or is it cheaper?

Mr. Brittan: That is all governed by the amount of potash you get in a pound. I have always found the American concentrated lye the cheapest. We can get it stronger from that than from any other ingredient we can use. The American concentrated lye I use should contain 95 per cent of potash.

A Delegate: I should like to inquire what kind of an apparatus did you use in applying it.

Mr. Brittan: I use a Gould pump—one of those small Gould force pumps. I have a tank and put the tank on a sled and a Gould pump and hose and a common garden hose nozzle.

Mr. Wilcox, of Santa Clara: There is this to say about that wash, and it is so with all applications for these pests: sometimes they succeed and sometimes they fail. Four or five years ago I put out a couple of thousand pear trees; some of them were affected and part of them were not, and the insects have increased a hundred per cent since that time, although the trees were all dipped before they left the nursery, and although I quarantined them on my place and burnt the refuse so that the insects would not spread that way. I am inclined to think the lye is effectual, but I think sometimes these insects are about the roots of the trees or about the clay of some substance

around them that the lye did not penetrate. After all the experiments we have made at San Jose, and we have made them very extensively, we have some left. I was induced a little while ago by Mr. Settle, of the Farmers' Union, where we get all of our washes, to buy a barrel of sal-soda; he said that was the most effectual of anything they had tried. I would like to hear from other persons in regard to that matter. I am inclined to think that these washes are all effectual, but that they do not always reach the insect.

J. H. Kellogg, of Tustin: Eighteen months ago, digging around one of my apple trees, I discovered that I had a pest, which I was told was the wooly aphis. I was advised to put lime and ashes, mixed, around the butt of the tree, and to pour on some water; and Dr. Chapin proposed to take caustic soda and make a solution and let it run down. I tried both, and the lime and ashes were not effectual. The caustic soda I applied, and I found it killed the wooly aphis. I applied it again and again, perhaps five or six times, and I think that I have nearly conquered the woolly aphis around the trunk of the tree; but it would appear again in the foliage and around the larger branches. To defeat that, I put on coal oil. I took a brush and dipped it in coal oil and applied it, and that will kill the wooly aphis; but it breaks out in another spot, and as the matter stands, about one-half of my apple trees are free from the wooly aphis and the other half are still affected, and I am still fighting them.

Mr. G. N. Milco, of Stockton: As nearly as I can understand, this county has been seriously infested by the cottony cushion scale. I would like very much to hear what has been done in the matter, and what remedies have been prescribed, and then I shall offer something that I have got on the subject. I have a remedy, and, if the members of this meeting will allow me, I will submit a letter on the subject:

SACRAMENTO, November 14, 1885.

G. N. Milco, Esq.,—DEAR SIR: I write to advise you that I have been using buhach for the extermination of the cottony cushion scale, with very favorable results. The trees infested were in gardens, some having beautiful grass plots, and others were stocked with choice flowers, etc. I could not use the common washes containing coal oil, etc., as it would destroy the flowers, grasses, etc.

After defoliating the trees, shrubs, etc., I used a solution of soft soap 15 pounds, buhach 1½ pounds, water 20 gallons. The trees and plants being thoroughly sprayed, the grounds were also thoroughly soaked so as to destroy any that had fallen off. I have made a thorough investigation, and cannot find a living scale on the trees treated in this way; besides, the use of the buhach instead of coal oil, etc., protected the grass and other plants.

I intend repeating the spraying lest any may have escaped on the flowering plants, and will report to you fully, or at least will send you the report that I will make to the Board of Trustees of this city, who ordered the work done.

I am well pleased with the result so far, and I consider the money expended in purchasing 30 pounds of buhach was an excellent investment, not only as a safe remedy for the protection of plants, but as an insecticide; in such cases it has no superior.

Yours, etc., MATTHEW COOKE.

It may not be known, Mr. President, that Mr. Cooke took a contract from the Trustees of Sacramento city to eradicate the cottony cushion scale for a certain consideration, and no money to be paid unless they were satisfied that the work was done.

Mr. Cooper: Please state the cost of that mixture.

Mr. Milco: My opinion is that the cost of this wash, according to his formula, will be something in the neighborhood of seven cents per gallon, but as the wash is not used as my friend Mr. Brittan says, through a common garden hose, but through the Cyclone nozzle, the wash will go a good ways, and a gallon will probably go over a good deal of space.

Mr. G. M. Grey, of Chico: I would like to say one word on the lye question; it seems to have been dropped. I do not know the amount of lye that each person could make by collecting the ashes and making his own lye, but that would be better than anything we can buy. We have at Chico several engines running in town and on the ranch where I am at work. We have taken pains for the last three or four years to save all the good hard-wood ashes that we could gather, and then at the time that they want to use the lye to make it in hoppers, running it into a large pine tank which is buried in the ground (it seems to hold it better that way than any other we can find), and we use the lye for these insects which are doing so much damage. I agree with these gentlemen who have remarked upon his question that I believe that there is nothing any better to be used than lye. When we use concentrated lye we use three-fourths of a pound to a gallon of water; that is about as strong as the more hardy trees will stand, and it is as strong as we can handle. We have no San Jose scale, but we have been troubled with the rose scale or the white scale on our blackberries, and by going over the blackberry bushes twice each year we are getting rid of them entirely. This fall there seems to be a sprinkling of them, but only a few; and we have reduced the quantity of wooly aphis very much from the apple trees by using this lye once or twice during the winter, and putting ashes around the roots of the tree. A half bushel, or about that amount, is placed around each tree, and we have continued that until I think now there is only one wooly aphis where there were a thousand three years ago. As to the cottony cushion scale, there was one tree which stood in the woodyard away from anything else and it was reported to me two years ago that it was covered with something white. I went and examined the tree and found it the cottony cushion scale, and we haven't found anything of the kind anywhere else in Butte county that I know of. That was the only tree, and where it came from, and how it happened that they were not scattered more, is a mystery. I spread straw around the tree for a foot deep, and cut off every branch and let them lie on the straw two or three days until the leaves wilted, and burnt it all up. I supposed it would kill the tree, but the next spring it came out and now it has a large, fine crop, and not a sign of the cottony cushion scale on it yet.

Dr. O. F. Chubb, of Orange: I want to state, in regard to the lye treatment, that under my observation some gentleman was using concentrated lye with lime, a very thin wash and very cheaply prepared—I think one pound of lye and one pound of lime to five gallons of water. They used lime, claiming that it attracted the lye to the limbs and the leaves of

the tree and retained it longer. It is one of the latest applications that we are making in that county, and it seems to do the work most thoroughly. Now, there is a point that is touched on by the gentleman from Santa Clara that I think needs more consideration than we have been givng it; that is t he application of such remedies as contribute to the growth and thriftiness of the tree. I believe that it will accord with the observation of most of you, that the more thrifty any fruit tree is in its growth the less it is affected by the pests, and the scale particularly. That has been my observation, and I believe if the most eminent chemists would give it their attention and give us the chemical ingredients necessary to promote the more thrifty growth, so that we would use those, we would have less trouble with the scale. I call to mind an orchard that I examined in this city two years ago, where the entire tree was almost entirely free from the black scale which was then the only one infesting this section to any extent (that is, the white scale had not been talked of), and I asked the owner how he had secured that degree of cleanliness from the black scale. He said he had done it by making a very heavy application of sheep manure from the sheep ranch and corral. He hauled on a very large quantity and applied it thoroughly. There was one tree that I discovered that had a large amount of black scale on it. I said : "How is this that this tree is so affected and the rest so clean ?" He said that the tree was damaged, and called my attention to the body near the ground, where the bark had been almost torn off clear around from a team he had cultivating running away with the harrow and running against the tree and breaking off the bark and almost destroying the life of the tree. It so far interfered with the growth that there had been no growth for two or three years; the result was it was covered with black scale at that time. At the time I saw it, it was somewhat recovering. This point of promoting the thrift of trees, and if possible by applications that will also kill the insects, I believe is a vital point.

Dr. E. Kimball, of Haywards: I have an olive orchard at my house—about five hundred trees. They became thoroughly infested with black-scale—on every limb, some of them. I cut off the entire top in March, a year ago, from four hundred trees; cut them right down to hitching posts, leaving only short stubs of limbs. I subsequently washed those trees with concentrated lye, one pound to four gallons of water—simply sprayed them with the San Jose nozzle. On the sixth of May the first leaf came out; they now have tops almost as large as they were before, and from some of them I have picked five gallons of olives this year. On the hundred trees that I did not top there is more or less scale now, although treated in the same way—by drenching them thoroughly, but not with the same treatment. I treated them with ten pounds of Los Angeles whale oil soap and twenty pounds of quicklime to forty gallons of water. That has not killed the scale entirely, though very little is left, and none of it has been communicated to the trees that I topped. I fail to discover one on them, and they are in a very vigorous condition. I then tried the same wash, ten pounds of whale oil soap and ten pounds of quick-lime to forty gallons of water, on about twenty-five lemon trees that were thoroughly infested with the black scale and some willow scale. It had not the slightest effect upon the willow scale, but the black scale it has about half killed. I have not found that effectual on any trees, but the one pound of lye to four gallons of water, I have found effectual. That will eradicate the black scale, the only scale I have, except the willow scale.

Mr. T. A. Garey, of Los Angeles: Dr. Chubb's statement in regard to the vigorous growth of the orange trees having a tendency to clear the tree of black scale is a fact. I have known orange trees taken out of nurseries in the vicinity of Los Angeles thoroughly covered with the black scale planted on the rich high land toward the mountains where the conditions seem to be more proper and better for the orange trees, and they cleared themselves entirely without any application of anything whatever. The change in the location and the vigorous growth of the tree will clear the tree of the black scale, but that is not the case with the cottony cushion scale. The more you cultivate the tree the more vigorously it grows, and the more vigorous your cottony cushion scale becomes. I don't think it has any tendency whatever to reduce it. It is a pest that will require the combined wisdom of the people of this State and locality to remedy and to eradicate, and that remedy should be cheap enough to be within the reach of the people who need it. Now, when Mr. Milco talks about seven cents a gallon for the expense of his buhach and other things, that ends the matter. Though it may kill all the scale, the cottony cushion scale, the ordinary orchardist cannot afford to pay it—it would bankrupt him. About as cheap and probably a better method would be to dig the trees up and burn them up. We must get a safe and sure and cheap remedy. A few wealthy men of this county may stand seven cents a gallon for spraying their trees, in order to eradicate the white scale, but the ordinary run of orchardists can't do it, so that however effective a remedy may be we could not have it, because of the expense; it would be an embargo upon it. Now, I hope out of the deliberations of this convention, and what we may learn to-day, that we may get down to something that would be practicable in the way of eradicating this terrible pest—the cottony cushion scale. I do not think that we have any San Jose scale in Los Angeles county; if we have I have never heard of it. I don't know for certain, but it is of great importance to us to know something about it and the prevention and the cure, because a cure for the San Jose scale would be likely a cure for the cottony cushion scale, and that is the thing we are looking to more especially. The wooly aphis has also been referred to; my impression is, the best way to kill the wooly aphis is to dig the tree up and burn it up. One gentleman from Orange stated that he applies a little coal oil when he sees it on the branches, and one-third of his orchard is clear and two-thirds are affected. I think it will continue to do that way; it is a continuous trouble and a continuous expense. The wooly aphis, I think, is one of the most difficult things to eradicate from our orchards that we know of. In regard to the remedy of brine, proposed by Mr. Thomas, of Visalia, I suppose that he has refer-

ence to the San Jose scale on deciduous fruit trees I would like to know of Mr. Thomas how long it has been since he made that experiment, and the condition of the trees after he made the experiment. They have been speaking about the deleterious effects of the coal oil on trees. I do not think it will compare with brine. I think the salt brine will kill the tree outright and you will get rid of it without any trouble, insects and all. I know that salt brine around the roots of orange trees will kill the trees; they will shed the leaves almost at once and the tree will dwindle until it dies if there is any strength at all in the brine. You have got to look out for that.

Mr. Milco: As near as I can understand the gentleman, the complaint is that the remedies, like that proposed by Mr. Cooke, were too expensive. Now I would like to know how much money has been spent in washes for the last five years in this State, and I would like to know whether there is a single man here to-day who has an orchard that is clean from insects. I would like to know if there is a man on this floor that has a remedy.

Mr. Garey: I would like to know if you have a remedy.

Mr. Milco: The remedy is just read to you.

Mr. Garey: Well is it effectual by one application?

Mr. Milco: It seems so from this letter from Mr. Cooke.

Mr. Williams, of Fresno: I think this is the best opportunity for Matthew Cooke to get a big contract on his hands right here in Los Angeles county. He took a contract in Sacramento for eradicating the scale permanently for $200. I think there were four places that were infested with the scale, and if we had Mr. Matthew Cooke down here I think we would give him a big job, and if that remedy is as effectual as they say it is, I think it economy to let Los Angeles county out to him and let him do the job up at once and get rid of it.

A Delegate: How large was the tract in Sacramento?

Mr. Milco: I don't know anything about the extent, but I know I read an article in the *Record-Union* last July calling attention to the danger of the spread of this scale insect, and finally it was brought before the trustees, and the result is just as Mr. Cooke states in his letter.

At this point the convention adjourned until afternoon.

At the opening of the afternoon session on Tuesday, Nov. 17th, the following

Address of Welcome

Was delivered by Stephen M. White, Esq., of Los Angeles:

Mr. Chairman, Ladies and Gentlemen:—Some little time ago, the committee to which the management of your reception had been entrusted, inquired whether it would be convenient for me to address to those who should assemble here words of welcome, and to say in behalf of the citizens of Los Angeles county in general, and more particular in behalf of those who are directly interested in the work in which you are engaged, that your advent is not only in accordance with public desire, but that the greeting which you may expect will be cordial and sincere. Entertaining such sentiments myself, and glad of an opportunity to give them utterance, I accepted the invitation, thinking without justification, it seems, that I would be able to reduce my thoughts to a coherent and intelligible form. I know that it is the habit of those who address public assemblages to excuse themselves for crude and unstudied utterances, and when this is done the speaker, as a rule, has stored in his pockets, or placed in the printer's hands, a very large amount of manuscript which has been the subject of much attention.

However unreliable such statements generally are, I can, nevertheless, truly say that it has been impossible for me to prepare anything in the nature of a speech, and the limited experience I have had in such matters has convinced me that inadequate preparation is worse than none, and that extempore efforts are calculated to do more good than partially preconceived efforts. Perhaps it is better that unyielding circumstances have precluded my giving this address the care it merits by the occasion. Had I been "prepared," I would no doubt have spoken glowingly of our balmy atmosphere and Italian skies; would have dwelt upon the dryness of the air, and I might have said something as to our irrigating necessities. In view of the condition of our streets, the demand for overcoats, and the uncertain tenure by which we all hold our umbrellas, such remarks would have been the subject of no little embarrassment.

With this preliminary, let me say that Los Angeles city and county, and Southern California, extend to you an earnest and enthusiastic welcome.

Glad to have you here as friends, we are overjoyed at the presence of an organization formed on a legal basis and endeavoring in a scientific way to insure the permancy, and advance the interest of that which is fast becoming the leading industry of California. It is not long ago since the interests represented by you were regarded as merely incidental to others—as hardly worthy of secondary consideration. Men looked to mining, the raising of stock, and in some localities, to the production of cereals, as about the only means of acquiring a livelihood.

And to have attempted a thorough investigation of those matters which you are here to fully examine would have been deemed an idle dream, a visionary scheme, unworthy the attention of a practical man.

How great the change which time has made in this, as in almost every walk where the requirements of the situation draw upon the industry and intellect of man! And how the face of nature has been transformed and even the current of trade reversed!

Not many years have elapsed since it was supposed that marketable apples could not be grown in Los Angeles county. Yet, a few days ago when our fair was held in the large market building nearly opposite us, one person displayed 300 varieties of magnificent apples, raised by him in this county. The exhibit not only enlisted universal comment but excited the applause of the numerous visitors from other States, who were fortunate enough to witness that tangible evidence of material development. Potatoes, cabbages, vegetables of all kinds were largely imported by Los Angeles dealers some years past, and the assertion that a miscellaneous fruit production would ever

emanate from this portion of the State, if ever made, would have been treated with unconcealed incredulity.

It is unnecessary to refer to the patent fact that fruit production has passed the embryo stage and that the great possibilities, which are offered by our climate and peculiar condition, are of such magnitude as to render it difficult to realize them.

To me, one of the most pleasant features of the situation is to be found in the contemplation of the fact that our movements are not directed by chance, and that combined effort will soon eliminate the element of uncertainty which must ever attend that class of business which is at the mercy of a stronger power. Nor is the prospect only that which follows combination. Intelligence and experience are to guide and to govern this organized industry. The Legislature will enact such laws as are found consonant with fundamental maxims and at the same time sufficiently comprehensive to effect the desired object.

When the initiatory steps toward the extirpation of fruit pests were being taken, many well-minded persons objected to investing, as they said, plenary power in a few men. It was asserted that it was dangerous to permit the invasion of private property against the will of the owner, and under circumstances which did not seem, viewed "in the light of other days," to warrant a disregard of the owner's wishes. "I can and will attend to my own business," was the cry. But, adopting that practical business-like view, which is perhaps incident to American manhood, and remembering that the citizen must so use his property as not to materially impair that of his neighbor, and that the "police power" was co-extensive with the danger, our fruit-growers are practically unanimous in their submission of official authority, and the only question appears to be as to the most desirable means to gain the desired end.

We cannot, amd indeed do not, attempt to deny that the fruit prospects are largely impaired by the presence of numberless and invidious foes; in this very city the scale bug seemed for a long time to be master of the situation. Slow, non-radical treatment was barren of results, and only since "heroic treatment" was adopted have we entertained, and, with reason, too, strong hopes of ultimate mastery.

The methods essential for success—those from which the best results will flow—must become matters of common learning before the fight can be said to be thoroughly organized.

You, gentlemen, who are devoting yourselves to this work, not merely for your personal benefit, but also for the well-being of your fellow-citizens, must, through your personal labor, and by means of conventions such as this, supply the needed instruction—give the proper education.

The consequences of your movements upon the enemy are being notably felt. I observe a steadily growing desire to recognize and appreciate your leadership in the important charge over which your jurisdiction extends.

You are looked to as forming a tribunal created to furnish useful information, to make suggestions and to carry out the views you enunciate. All parties interested have a right to look to you for this and I know they will not look in vain. The eradication of a serious peril—one which menaces the permanency of our State's resources, is no trivial affair.

The proper treatment of the vital issue thus presented is of more importance to us at present than the result of any political caucus or convention, or even election. I do not feel myself competent to make any specific suggestions to you, but allow me to say that the efficacy of your action here depends somewhat upon its unaminity. Divided counsels are rarely productive of intended benefit. Full, candid and thorough discussion should, no doubt, be had; but after ample consideration make some recommendation upon which you can afford to stand and do not doubt that your decision will be considered enough to warrant its general and practical application.

Our knowledge has surely reached the point where we clearly and unmistakably see that without the aid of the Government and an intelligent body to enforce the law, our prospects would not be bright, or the chances of enduring prosperity encouraging.

That American brain and muscle is fast winning the upper hand in this battle I take for granted, and with that conflict determined in our favor, who can measure the greatness in store for California? There was a day in the earlier stages of her being when those who, animated by youthful energy and lured by tales of golden treasures, came to her shores for pecuniary gain alone. Their restless activity guided them to hitherto unexplored fastnesses, under, along and over beds of rivers, below the mountain's base, all to acquire enough to enable the possessor to return to his native heath, and enjoy the profits of his perilous enterprise. Those days are gone. The cattle king with his mighty herds finds his exterior boundary lines contracting. The great farmer, whose thousands of acres yielded him but a meager crop, sold at a meager price, is gradually passing away. The spirit of progression waves us on toward the vineyard, the orchard, the neat homes, the garden and the well cared for stock farm.

Ancient methods are being displaced and the mind as well as the soil is found to be a subject for profitable cultivation.

The tendency of your efforts is towards a higher civilization; it means the increase of independent land-owners, the encouragement of those things which civilize, which do good, which destroy crime, or rather obliterate its causes.

The unavoidable delays which the late storm has occasioned, and the consequent change of hour for this meeting has somewhat complicated my business appointments. I am, therefore, compelled to close, which I will do by welcoming you once more to Los Angeles, assuring you at the same time that you will have general and cordial co-operation in your efforts to advance and promote those great enterprises, which, supplying honestly acquired wealth, at the same time drive away care, and develop and cause to be transmitted that happiness and personal satisfaction which is among the most common of legitimate aspirations.

Discussion on Insect Fighting.

After the address of Mr. White the discussion on injurious insects was continued.

L. J. Rose, of San Gabriel: I have been a resident here for some time and engaged in orange

culture, and have done a great deal in the way of trying to eradicate the scale bug. In the first place we had the red scale, and we were very much alarmed about it. I then began cutting off the trees, trimming them so as to leave nothing but the bare branches, and scouring the whole tree with soap and water. After a few years they grew out very beautifully but were as full of the red scale as they were before. I have the cottony cushion scale now, and I am doing everything I can to find out what will kill it. We have done a great many unnecessary things, and we have done things that may have been of doubtful benefit and of more expense than is necessary. The formula that I first used was whale oil soap, coal oil of such a standard of fire test and potash. We now find that whale oil soap is not necessary, in fact it is an injury, because it stains the fruit; whereas common cheap soap does not stain the fruit, so we are using a wash that costs less money. Again, the fire test coal oil was considered a great benefit and a great necessity. If I may judge from my experience, it is of doubtful benefit; in fact, I think it is of no benefit at all. It kills the bugs, but the potash kills the bugs without it, and the potash is a benefit to the soil, and is of no injury in any respect. I will state to Mr. Milco that I have heard before of Mr. Cooke's opinion and belief. I do not know of a man that I have a greater esteem for in this matter. On the other hand, I have gone through so much here, have seen so many things that turned out failures, that I have some little misgivings that Mr. Cooke is mistaken, too. I know something of the lot in Sacramento which he treated. They had little trees that were trimmed off and radically treated, and I have no doubt that they are free from the cottony cushion scale to-day. According to the experience we have had here for two years with the remedies I have said I have used, they kill the bug, but there is another fact: as soon as you begin spraying the bug falls off the tree and it buries itself in the soil, and when you are done spraying the bug again ascends the tree, and in a little while, by its prolific habits, is as numerous as ever. Now, this has been my experience; it has been the experience of the whole county. You cannot show me one place where the scale has been eradicated. That is a broad assertion, but I think it will be substantiated when thoroughly inquired into. I have seen cases where you have said: "Eureka! we have accomplished it; it is no more here," but in the course of two or three weeks they found some. That is a great misfortune. Mr. Cooke has had favorable conditions. He has had trees eight or ten feet high. He trimmed them himself and had a small territory, and he has, as he believed, eradicated it. I hope it is true, but we have trees here that are 30 feet high, and it is almost an impossibility for the spray to touch every animal, but if you can it kills it. And it is not only necessary to spray the trees, but you must have some way to prevent the scale bug from ascending again; that is what we are trying to do, and every little while we find something that we think has accomplished the end. We have not quite succeeded yet. I have belief that it can be done, but up to this date we have not done it yet: to be able to say that we have wiped it out in any one place as a permanent proposition.

It is true that the cottony cushion scale is easier killed than any other scale bug; it is easier handled than any other that I know of, and I believe that in time you can entirely destroy it. As it stands, I do not fear it a great deal except as a matter of expense. I have heard some of my neighbors say that even the expense they were at in spraying was of such benefit in the brightening of their fruit and of the growth of the trees, that in the end the work we are doing will pay. That we can keep it under so that it will be of no permanent injury is true, but, of course, we would be glad to avail ourselves of any remedy that would do the work and have it done with forever. I will say to Mr. Milco that seven cents a gallon for his preparation will not be a bar to our use of it, but it must be proven that one application will be the end of it, for we have now remedies that are much cheaper.

Mr. Milco: I will say, as Mr. Rose touched on the subject, that if Mr. Cooke can be paid by Los Angeles county for his expenses to come down here and make some experiments, at any time we will furnish all the material free of charge.

Mr. Rose: I will assure him his expenses will be paid. I will pay my portion of it, and pay half of it if he will do it. There will be no question about the expense.

Dr. Conger: I have great admiration for Mr. Rose, but however skillful any one person may be in any special line, in something that he has but little experience in he is about as liable to err as a novice, possibly. Now, Mr. Rose has an immense tract of land, he has probably the largest orange orchard in Southern California, and it is a puzzle to a great many how it can be carried on by one brain. It is very extensive, and unfortunately the red scale and the white scale have taken possession of a large portion, especially the red scale. I am quite well aware of his experiment in cutting away the trees along that noble drive leading up to his house some years ago to eradicate the scale, but in my opinion after he had treated those trees as he related, had he eradicated them from the balance of his orchard they never would have returned to those trees. I think there is where the error comes in. I hardly think there is a question about that, that after treating that avenue the scale bug was yet existent in the other portions or his orchard, and, of course, it is on its way back to those trees that were so thoroughly treated. The red scale is confined to only a few localities in this section of the county. In the southern portion of the county it is quite persistent and is exciting a good deal of interest. In the section which I represent—that is Pasadena—we have not had the red scale, but we have had the cottony cushion scale, and it has fallen to my lot to be the guardian of that district. The first tree I found on my place, I raised a rumpus about, and went to the paper and advertised it, and of course I had all Pasadena on my shoulders; they said you are going to destroy Pasadena by publishing that you had the cottony cushion scale; fortunately I was not selling real estate, and I did not care very much how those who were giving their entire attention to selling lots were disposed to growl because I was finding that in my orchard. I immediately went down to my tree and cut the top entirely away—that is to say, I cut it so as to leave the branches

sticking up so [experimenting with his fingers], preserving the contour of the top of the tree; but I cut away every limb and every leaf, and then I got simple, common soap and water and scrubbed it down—every portion of it. I laid down a canvas around the tree and put every branch as I cut it off on that canvas and carried down some hay and built a bonfire and burned all the brush on that canvas in that bonfire. Then I took a shovel and dug up the soil for, say three inches, all around that tree and burned the soil and shook the hot ashes around the surface of the ground and went home. That was the last of May, and there has not any scale-bug appeared since. Now the tree has a fine top, some of the limbs are an inch or more in diameter, and there are no signs of the cottony cushion scale at all: yet that tree was literally alive with them. I state this for the purpose of showing that there is a remedy. That is the point; but it may take as much brain as kerosene or potash to eradicate the scale or anything else. Now, I pretend to say that there is not a white scale in California on an infested tree but that can be eradicated from it by that simple process, and it didn't cost half, probably, what is being expended every day in the week on things that are killing the trees as well as the bugs. I relate this to show that there is a remedy. There are other remedies, in my judgment. In a little orchard where we supposed that the scale had its first lodging in Pasadena, Mrs. Black's orchard, we found 110 trees badly infested. It fell to my lot to attend to those trees and see that those bugs were eradicated. A gentleman loaned me a spraying apparatus, and we together got up a mixture different, somewhat, from anything I had ever heard of at that time. In the first place I had the tops of about 60 of the worst trees entirely cut away as I had my own and treated in the same way precisely. I think a little coal oil was used in that mixture for scrubbing the trunks down. The balance of the 110 trees were thinned out and sprayed with 14 pounds of caustic soda and four or five pounds of common soap to the hundred gallons of water. The soda cost us six cents a pound wholesale, so the expense was scarcely a penny a gallon. To but two of the trees that were cut away and thoroughly washed did the scale ever return up to four weeks ago; the others are perfectly free to this day. Of the balance of the trees, where the tops were not entirely cut away, I found 18 that had a few scales on a few weeks ago and I ordered those sprayed again. Now, the point that I make is this: it is, as Mr. Rose says, almost impossible to reach every portion of the tree with any material that you may use; and there is where the difficulty lies; then if you wanted to spray the trees repeatedly with a strong solution you are going to kill your trees; and why? Every time that you spray with a strong solution you are checking the flow of sap, you are interfering with its vitality, you are interfering with its functions, hence if you repeat that once a week, as some have suggested, you constantly keep the tree back and it will lose its vitality, and if it does not kill it outright it will very seriously interfere with its vigor, whereas, if you cut the top of the tree away at the outset and use the simplest material, you get rid of all the scale there is. You destroy the last one, and by watching a little along for the next two or three months, there is no necessity of any scale returning to any of those trees. There may be a few in the soil. A cultivator never should be used about those trees, for the insects are carried by the teeth of the cultivator from one tree to another, and some persons may go in an orchard and carry it from one to another. But if you watch the trees they generally lodge two or three feet from the surface of the ground and, of course, you can kill them at once. Now, here is a solution that costs scarcely a penny a gallon that will kill this white scale. I use caustic soda, which costs less than anything else, and in the solution that I make, instead of clear water I use a saturated solution of lime water. Potash, of course, would be better than soda because of its fertilizing value, but it costs a little more than sal-soda. It only takes a quarter of a pound of lime to make a gallon of lime water, so you see it is comparatively inexpensive; and the lime itself will destroy the fungus and some other things, especially if you put in a pound or two of soap, and with your caustic soda you have got a solution that costs you a trifle over a penny a gallon, if it does that, and most assuredly, gentlemen, it will destroy the white scale. I cannot speak as to the red scale as I have never tried it. It is an entire remedy for the black scale, although I must say that something has occurred in California this year that has destroyed the black scale entirely. In Pasadena and Orange and the places I have visited we cannot find living specimens of the black scale. I wish to suggest to people who have the white scale that the quickest, and surest, and safest method is to cut the top away. It puts it right out, and in a few years you will have a crop of fruit on it, and with less trouble and less expense; and I believe the vitality of the tree would be subserved by that method.

Mr. Cooper: I would like to ask what the expense would be to treat an orchard in that way?

Dr. Conger: I paid 15 cents a tree for the spraying of that solution. In cutting back and pruning up I do not remember exactly; I think for the whole work it was about $100 for the 100 trees, cutting the tops away, scrubbing them down and burning the brush—the entire work.

Mr. J. W. Sallee: I want to say a few words about the red scale. I have just returned from the southern part of the county, and have talked with a great many fruit-raisers about the eradication of the red scale. They have almost universally come to this conclusion: that to undertake to kill a red scale after it has matured and thoroughly attached to the leaf and fruit is almost impossible. It is a scale that attaches itself very closely to the fruit, so that it is almost impossible to reach it with any known solution, and it will hatch four times—four generations in a year. When the young bug first comes out it crawls around for a couple of weeks, and in that stage it is very easily killed, and it is the conclusion of all that I talked with, that to kill the red scale you must spray often enough to catch the young bugs on foot with a solution that will not cost more than 25 cents a tree to spray in the foliage, without cutting the top. Mr. Joel Parker has some trees that have been infested with the red scale for four years. He has only sprayed once during each year until this year, and he has preserved both the tree and the fruit,

while his neighbors, who have not sprayed at all, have lost the tops of their trees, and last year the crop of fruit.

A Delegate: You speak of orange trees?

Mr. Sallee: The red scale does not infect deciduous trees, and these trees I speak about are orange trees exclusively. Had they sprayed four or six times a year at the expense of 25 cents a tree that would be only $1.50 a tree, and if it had been done this year the fruit on the tree would have more than paid all the expenses and given a handsome return to the owner besides. They have come to the conclusion that if they spray frequently, catching the young bugs on foot, they can eradicate them entirely, and it nannot be done in any other way, and they spray with caustic soda, as recommended by the last speaker.

Dr. Conger: I wish to add what I have omitted: that the solution of 14 pounds of caustic soda to the hundred gallons would injure the fruit to such an extent that it would make it unmarketable. The necessity or the advisability of cutting away the top of the tree at the outset is because if you have to spray them continuously, as you have to unless you cut off very materially, you destroy the fruit by spraying with a solution that will kill the bug. That is the fact.

Mr. Sallee: It does not require a strong solution to kill the young bug when it is crawling; before it attaches itself to the tree or the fruit.

A Delegate: Hot weather seems to be more conducive to the growth of the red scale than cool weather, while cool damp weather is conducive to the black scale. This season has been a prolific one for the red scale. The means of spreading the scale from one orchard to another is a matter we ought to consider. It has been suggested that birds carry the scale and it is very probable that in building nests as they are sometimes allowed to do in trees, will start a growth of scale on a particular tree that will spread to an adjoining tree. At our last horticultural meeting in Orange we passed a series of resolutions aimed at the honey bee; some are very positive in their ideas that the honey bee is one of the greatest means of spreading the small scale (the red scale and possibly the white scale), and we resolved as the sense of our meeting that the apiaries should be removed to the mountains beyond the reach of the orchard. It has been discovered in some cases where small orchards were just beginning to bear, that only those trees that had blossoms were infested with the red scale, while others surrounding them that had not blossomed yet had none at all. That led us to conclude that the scale was carried by the bees as they visited the blossoms. If that is a fact it is a question of interest to be considered: because when an orchard is once clean it ought not to be again replanted with the scale by the bees or the birds. We are all friends of the birds, but if they are going to attack our means of livelihood, we will have to attack them also.

Mr. Goepper, of Santa Ana: I think that Mr. Sallee is mistaken about the red scale not going on any trees but citrus trees. At our last meeting at Orange a gentleman there stated he has found the Italian cypress trees thickly covered with them. I didn't see it myself, but there are other gentlemen here that heard the statement and remember his name.

Mr. Sallee: I have seen the red scale on other trees, but I have never seen them appear to breed on those trees. They seem to have been carried there after they had hatched. I don't think that they hatch on any other trees except citrus trees.

Mr. Milco: Last summer a fruit-grower in your vicinity, in San Joaquin came to me and said he had 12 acres of common prune trees and there seemed to be thousands of the San Jose scale running at large all over the trees. He asked me to come over and make some experiments with buhach. I drove over to his place with a small quantity of the powder of buhach and made a solution at the rate of 50 gallons of water to a pound of buhach, which would cost about a cent a gallon (if a person were buying it in large quantities), and I sprayed three or four trees, just for an experiment, and told the gentleman that I would come over again and examine those trees and bring a microscope and see what the result was. Before we sprayed the trees they were perfectly alive with living scale about the size of chicken-lice; you could fairly see them with the naked eye. The next time we came there and cut off a piece of a tree about as big as a silver five-cent piece and placed it under a powerful microscope, and I dare say there was a thousand dead insects on it—some of them stuck to the bark and others hanging in every shape—but dead; not moving. In three or four days after that, the same man come back again and said, "You have not killed the scale-bug at all; they are creeping all over the tree." It is a fact, as the preceding speaker has said, that these scales are coming out in several breeds; a lot of them may come out to-day and another lot next day and so on for eight or ten days, and while they are coming out in that way I don't think there will be any trouble to kill them. And that applies not only to the San Jose scale, but to every other insect that is moving. A solution of buhach will do it without any danger to the tree, the foliage or the fruit.

Mr. Sallee: I want to make one more suggestion on the subject and I will illustrate it by cultivation. No orchardist would undertake to cultivate his orchard once in a year and let it go for the rest of the time because the weeds will spring up, he must go frequently and kill those weeds as they come; neither does he want to buy a steam engine to do his cultivating: he wants the cheapest material he can work with. It is just so with the scale bug; if we expect to eradicate the red scale especially we must do it by frequent application of a cheap spray that will kill them and a very cheap spray will kill them when they are on foot; but when they are attached it is not wise to try to kill them. As Mr. Rose has said there are many failures though many have been killed, and if left alone they will in a very short time, cover the entire tree. It has been well said that the price of oranges is eternal vigilance.

Mr. Garey: This whole scale bug question is a matter of experiment in the State of California and will be for a good long time. One man is using one solution, another man is using another; one a certain emulsion and another another emulsion and so on, and so the matter is experimental. We will be in this experimental stage for a considerable length of time, and there is this about that: in this matter of experiment we must be careful not to ruin our orchards nor to bankrupt ourselves; we cannot

afford I think to spray our trees six times a year at the cost of 25 cents a tree each time. It looks very well on paper to sit down and figure out how much your orchard, your crop will bring you, and that if we spray and save our crop it will bring so much money and we will have so much left, but the solid facts are that it costs $160 per annum on that plan just for the one item of spraying our trees. We cannot afford it; orange orchards will be a thing of the past in a few years if we have got to continue that year after year; we must find a cheap and effective remedy that will do its work if possible at one operation, and that will do it thoroughly and effectually so that we have some time to rest; some time to recuperate. To-day we are told there are effective remedies that run from one penny to seven cents a gallon; that is a wide range. Now, then, if the penny remedy is effective, that is the thing we are after, for we must get down to a cheap and efficient remedy. The Board of Supervisors of this county have offered as a premium or reward $1000 to be given to the party who will invent and apply a cheap and safe and efficient remedy for the destruction of the cottony cushion scale. Some of us want that $1000, and I hope some of us will get it, for that is what we must have. There are men in this county that can afford to pay $50, $75 or $100 an acre to clear up their orchard, because they have something else, but I tell you, Mr. President, there is not one man in ten in Los Angeles, or any other county, that can afford anything of the kind. You may take and cut a tree off, denude it completely of branches and leaves and everything down to the bare trunk, and take nothing in the world but a bucketful of water and a certain amount of elbow-grease, and commence at the top and work that right through from the top to the bottom, and you will kill every white scale on it: that you will do by mere manual force, and a man can do about 20 or 25 trees a day, I think, after the limbs are cut off. I just speak of this to show that it can be done. Here is Mr. Conger, and my friend who sits on the right, who manages the Cascarona orchard of 1500 trees, in this city, who has had a great deal of practical experience, and who has succeeded in using common refuse soap that was formerly worth nothing, and is now sold at a cent and a half a pound. With this material and a scrubbing-brush, and the willing power of his good right hand, he has gone to work and cleared this place, and now it is perfectly clean. As Mr. Rose says, the white scale is very easily killed, very easily handled. He is very much mistaken about the last part of it. It is very easily killed, but it is the hardest bug to handle, so far as the entire destruction of it is concerned. There are very few remedies that don't kill a scale bug; the trouble is, you don't get it on all of them and they increase so fast and crawl up the tree again. I would like to hear from Mr. George Rice, the Secretary of the Commission for this section. He is a practical man, and one who has had a great deal of experience.

County Commissions.

George Rice: The Horticultural Commission is appointed by the Board of Supervisors, as provided in the State law, and every county in the State can have such a commission. I don't believe any other county has appointed one; has there, Mr. Chapin?

Dr. Chapin: There are quite a number of counties that have appointed county Boards of horticultural commissioners. Some of them have recently appointed new members to fill vacancies which have existed by natural dropping out and the time expiring for which the commissioners were appointed. Ventura is one county; San Diego has lately appointed a new commission, and Kern county has done so. There are other counties that have commissions, but they are not working accurately, and in fact it has been owing to some misunderstanding as to what they may be permitted to do under the county laws, and without coming in contact with the State law on the subject. A little further on, if it is desired, I will express the views which some have taken upon that subject, and which would open a practical way for perfect harmony and for a very effectual method of performing this work.

Mr. Rice: I presume one reason that the commissions of different counties are not effective is because the Supervisors have not appropriated any money for them. This county appropriated a sum for the expenses of the commissioners and the inspectors. This commission has been in existence four months; we have written to every spot on the globe where they have the cottony cushion scale or any other scale, for their remedies. We have received papers from Australia and India, and had correspondence with the department of Washington and Prof. Riley and his assistants, and we have compiled everything on that subject that we could get; every man in Los Angeles city that has a remudy, and every man that has an orchard has a remedy (and a good many of them have different remedies to try), and we have seen the orchard where the remedy has been tried. The law does not compel any man to use the remedy recommended by this commission on the start, providing he kills the scale bug, and this commission has been only desirous of killing the scale bug without reference to the remedy or the expense, except that we prefer it to be done economically on account of the orchardists. We have recommended two or three different things; we have changed twice; once from whale oil soap to common brown soap, simply to cheapen it and because the whale oil soap spoilt the fruit, and our object was to kill the scale bug. We know of no remedy so far that we believe is better than the kerosene emulsion that is recommended by Prof. Riley, and that has been in existence for several years. We have made some changes in the strength; we have added potash and some use it with and some without. I believe I could name 20 remedies that will kill the scale, but the only point is to put the remedy on the bug. I believe that this bug is to be exterminated more by main strength and a great deal of awkwardness than by any particular remedy. I hope that the $1000 reward that the county Supervisors have offered will call out a remedy that will in some way exterminate them, but I doubt about such a thing being reached I doubt that I or any of us will live to see the scale bug exterminated in this county. I will tell you why: A and B, and you may go down to the last letter of the alphabet, will exterminate the scale in their orchards, but this diligent man, Z, he is always in the center, and he keeps enough to supply the neighbors, and about the time they think the scale bug is ex-

terminated, they are not paying so much attention to it, they are not spraying so often, and the first thing they know they have got the scale bug back again. This scale bug is on the ground, it is in the woods, it is everywhere. We have not found a plant of any description or kind but what it goes on; it seems to be fond of everything. Now, the remedy is, as I said before, everything: and it has really a comical side. We have tramped all over this town, hunting these remedies; only the day before yesterday a man came to our office, and he had a sure thing that would eradicate the scale—quite an intelligent man; we apppointed the next morning at 9 o'clock to be at his place, and we went down where there were two or three trees about as high as my head, and he showed the trees he had been experimenting on. He had dipped a feather in the remedy and touched each particular scale bug. This is a sample of the remedy. We could have killed the scale bug on that tree with a dish rag, because it was a very small tree, but they are not all dead on it yet. I could name a good many other such experiments. We have some other gentlemen here who are experimenting and I would like to have them tell their own stories.

With respect to fumigating a great many persons seem to think that by treating the tree as Mr. Rose suggested a while ago, that they could kill every scale bug on the tree and likely those on the ground under the tree, but I don't know what to say, to tell you the truth, except this, and that is vigilance and work. There is no trouble about killing the scale bug on the tree by the proprietor of the place where he is interested and intelligent. He could make an emulsion or he could apply hot water that is hot when it reaches the bug, or he could apply a hundred other different remedies to kill them and exterminate them, but his negligent neighbor brings them back again; he forgets that there are a few weeds that are infested with them on while the rest of the orchard is clean, and he gets them back again. There is a little something about this that may be pleasing in this discussion: you go in the exhibition hall and I will show you the first clean fruit I ever saw in Los Angeles. They have all had a trademark. There are one or two samples that have that trademark still from orchards that have been thoroughly sprayed; we have calculations in our orchards from a reliable gentleman who gave us the figures that the difference in the price of his crop of clean fruit last year and what it was a year before a good deal more than paid for the expenses of cleaning his trees, and paid him a handsome outlay over and above the expenses. I believe if we could have a little show of the scale bug in the top of the tree to keep the farmer continuously cleaning his trees and make him keep the tree clean, those who grow citrus fruits may still find it an advantage so that they might keep on cleaning if they had not a scale bug in the world. However, I am very anxious to eradicate this scale ; but, as I said before, it needs intelligent work. If only one man did his own work it would soon be ended, but the proprietor goes ahead and makes experiments and goes about his business and the Chinaman sprays along leisurely, and I could tell you about a dozen orchards where the commissioners dropped in to see how they were getting along with the work and they were simply playing; the men know nothing about the subject whatever. They were not spraying, they were spending the money on the orchard, but they were simply fooling. Frequently gentlemen would come along and say that stuff does not kill, and we have gone to see the orchard to see what was the matter and invariably found a man with a single action pump and a Chinaman with a bucketful of spray pumping it onto the top of a tree 30 feet high, and, of course, it was not effectual.

Mr. Garey: What kind of scale was it on the tree? Where it was that the party figured that the improved price of the fruit paid for the cleaning?

Mr. Rice: The black scale, and we have an instance of the cottony cushion scale this year. They e timate that they can get a better price for the oranges this year.

Dr. Congar: I would like to add one word on the difference of materials, the reason why we should reject one material and select others. Caustic soda is used frequently to eradicate ulcers; it is used as a caustic in its full sense on the human flesh. Why? Because the moment that the pure article touches the human flesh it burns it and causes a scar; if you don't neutralize it, it will burn to the bone. It don't stop there, it will burn the bone itself. It is literally a fire; that is the property of caustic potash or caustic soda. Now you understand the use of the material; why it kills. It touches the more delicate membrane of the animal, the cottony scale or whatever scale you are treating, and the moment you touch it it burns just as you burn the human flesh—it literally burns them up. Now you take kerosene, or coal oil as it is called, of high test; it is used by mothers about their children's necks for croup, diphtheria and other things; you can use it upon your hand for a sprain as a liniment; it never burns; it will create excitement or irritation, but it has not the power of caustic soda at all. We want to make a distinction between the remedies we are employing, so that we can understand when we use it what we may expect from it and make the strength accordingly, so that we do not kill the tree. The moment you touch the tree with the oil it will kill it; that is why I prefer caustic potash or caustic soda to all these other remedies.

Dr. Lockspeitch, of Orange: I am a practical man of seven years in the culture of the orange. I have watched the scale bug; that is, the black scale first; secondly, I have watched the red scale. I commenced to doctor the black scale bug and used Mr. Cooke's remedy —the worst character of whale oil soap that they manufacture in San Francisco—and that didn't kill them. Mr. Cooke gave another remedy of using the commonest preparation of caustic soda, that is, concentrated lye, which costs eight and a half cents per pound by the case, and only 50 per cent of caustic in it. He told us to use it of a certain strength; that strength would eat up the valves of the pump and almost make soap out of it. Next we commenced with the best article of whale oil soap manufactured in Los Angeles. We used it one-half pound to a gallon of water, to kill the black scale, and sprayed my trees. The next year I had a better crop of black scale than I had before. That was three years ago, and we spent considerable money then, and I assure

you it takes money with the muscle. We then bought the best article of Los Angeles soap and we used 80 pounds to 100 gallons of water, and we sprayed in August, and we have not a single black scale that we can find on our trees. We had not had our attention drawn to the red scale, and still it was crawling in upon us and we hardly knew we had it. We were using, as I say, 80 pounds of soap to 100 gallons of water, that is almost a pound to the gallon, and it costs us considerable. It cost us over $1500 to spray our orchard, and we had not killed the red scale bug, and the question arose, What are we to do? Lots of our brothers will certainly fail in the pocket. Muscle is good, but the money is getting low, so we must get something that will hold up the money part. The muscle is as strong as ever, the will as good as ever, we can spray as well as any man in the world, and I challenge any man to beat us in spraying the trees, but we found that didn't kill the red scale, and if it did we couldn't keep it up so as to exterminate them; so we must get something else. Soap is composed of potash and a certain amount of grease, that neutralizes the soda, and it is neither grease or soda; your soda does not seem to mix well with water and certain preparations, and you must find some remedy—some way of mixing this caustic soda as not to destroy its properties entirely, because that is the very remedy that will kill your bug. You use one sixth part or one-tenth part of the soda that the Los Angeles County Board uses in its soap; you use it directly upon your trees, and it will kill the bugs and will not kill the trees, and you can reduce it down to a still finer point than that. We have sprayed this year three times with a preparation that we do not know will kill bugs or not; no man gives us a remedy that he knows that will kill bugs; everybody has a remedy, but the bugs are getting thicker and thicker, and how are we going to reach them? I do not propose to tell you my remedy until I know it will be efficient, but this is the direction: get the caustic or soda and reduce it down to that point that it will take effect upon the scale bug and not kill your trees, and it is the cheapest remedy and most direct remedy that can be used for the scale bug. I tell you the way we are working at it now will not accomplish the destruction of the scale bug. We have been washing three years, and have scale bugs still on our trees. What are we going to do about it? I say we *can* do it, but *will* we do it is the great question; if we can't do it right at once the best and the wisest policy, if we find we have made a mistake in planting orange trees, is to dig them up and cultivate something else. That is the way I look at it.

A Delegate: Have you tried kerosene emulsions?

Dr. Lockspeitch: I have, sir. I have tried over 30 remedies. A man approached me the other day and said, he had the very thing. "What is it?" He said, "Fumigating will do it." Three years ago I tried that. I took a tent and oiled it thoroughly and spread it over the tree; then I had the bugs of different classes and took very young chickens and put them into my tent. Then I built a fire and I ran the fumes into that tent. It did not kill a single live bug that I put in there, nor did it kill the little chickens, but in two days from the day that I did it the tree was as dead as a mackerel. That is fumigating with sulphur. I used the squirrel remedy also, and I never had any success with it; that is, I killed my bugs, but I also killed the tree.

Mr. Gompere: I shall not say much on this insect question from the little experience that I have had. When I first started in on the orchard I have charge of, there were only about three trees that were infested. For a few days we thought we would eradicate the pest and say nothing about it. We went to work spraying our trees on the sly, and before we knew it there were some more trees full of them and we could not keep it still any longer. Everybody wanted to know what we were doing, and finally we began to seek information, and tried this man's remedy and that man's remedy, and then I commenced to try a remedy of my own. I took a tent and placed it over a tree, and got a couple of my neighbors over there and we burned about 15 pounds of sulphur under there and let it burn for four hours, and I believe if a mule had stuck his head in that tent it would have killed him, and it did not kill the scale bug; but the minute I removed the canvas the sun struck the leaves and they turned white, and the wind scattered the leaves all over the orchard. We commenced spraying again and could not get rid of the bugs; there were always some left. Finally I went and I topped the tree off and I scrubbed the trunk off with a brush and common soap. I have 400 trees that I cleaned in this way and I can say are practically clean—that is, since last March. But on one side my orchard is full of them yet, and on the other side my neighbor's orchard is full, and as a matter of course, they will keep coming back. From my experience I am satisfied you never will eradicate the scale bug otherwise than by taking and removing the top of your trees and scrubbing them down by hand. If you have to go to work and spray your orchard two or three or four times, the fruit is not going to pay for the labor.

A Delegate: Are you following out that system of cleaning out the bugs?

Mr. Gompere: Yes; I intend to whenever my neighbor gets into the same notion, but if he don't, I will have his bugs coming over on to me.

Mr. James Bettner, of Riverside: I have listened with a great deal of interest to this discussion about the scale-bugs; I fortunately come from a portion of the country where, at present, we have none—but we can not expect to always enjoy that immunity. I have lived in this country ever since the scale-bug first came here, and have watched its progress. It has been said here by several gentlemen that this pest has kept on increasing, notwithstanding all the campaigns that have been carried on against it. I think the vital point has been touched by Mr. Gompere, who has just sat down: that this action, to accomplish anything, has got to be universal. Unless universal action is compelled by law, it does not seem to me that anything is going to be accomplished in the extermination of scale-bugs. They may be killed; but a supply is always nearer or more remote from you, and it is going to come back. I must confess I would contemplate with a great deal of awe the cutting back of my orchard to nothing—destroying my crop for two years certainly, and probably more than

that, with the almost certain apprehension that when the two years had elapsed the scale-bug would be back again from my neighbor's and I would have lost my two-years' crop. Now, there have been many remedies suggested here, and, no doubt, they all are more or less efficacious; and there is no doubt that, by constant spraying one time and another, the scale-bug can be kept in subjection. But the profit in fruit-growing is not large enough at present —I do not know as it is going to be in the future, to justify the expense of $50 an acre and from that up to $100—as I know some of my neighbors have spent in fighting scale-bugs.

Mr. Thomas, of Visalia: I promised this forenoon to speak in reference to the matter of the saline mixture in regard to the destruction of the San Jose scale and to bring some samples of wood, I have them here, and by applying the glass, you can see it was entirely killed, nothing left on it at all after this solution had been used. There had been a growth running out on these trees from 18 to 30 inches and by applying the glass carefully I could not find a live insect on any growth that had formed after the trees had been washed in a strong brine. This was found where a gentleman in the Central Colony, Fresno, had applied it on apricot trees and some peach and apple in August, and as far as I could see the remedy was effectual, simply using the brine as strong as he could make it. He applied it by taking a cloth and rubbing the tree; didn't use any spray at all. I do not know whether any person else has used it or seen it used.

A Delegate: I tried the salt brine on some trees of mine with the spray. It will remove the foliage from the tree, it will kill the tender shoots in the tree, and will not kill the bug. The only bugs I found it killed was where it was killed by the force of the pump; the force itself will do it, and you can do it with cold water if you have enough force. As far as salt brine killing them is concerned, it will not.

Mr. Milco: A friend of mine in Stockton, Mr. Beers, the banker, told me he saw in an article on the subject in one of our agricultural papers from the East, that by placing a handful of salt around the roots of the peach trees you would remove the borers. He was a little afraid at first, but he thought he would put on about one-half of that and try it. He said in about three months there were no more trees. They were all dead. That is the result of his experience.

Laws to Prevent Spread of Pests.

Mr. Milco: I would ask some of our lawyers as to the present law. They tell me the law has given a great deal of trouble. I think the present law is just as effectual as any we can make on the subject. The point is they have to enforce it. I say let us go ahead and enforce the law.

Mr. Wilcox: This is a very important question, and I think we cannot say too much about it. I believe we can destroy the scale. I have had my doubts about it at times, but last year I had two hours' talk with Prof. Riley at New Orleans, and he tells me positively you can kill any insect pest that ever existed, and those who heard him lecture went away satisfied that they could destroy that pest. The only trouble is, can you enforce a law, even if it is a rather troublesome and discouraging proposition? For instance, this cottony cushion scale appeared in Santa Clara township three or four years ago within the limits of the town and the trees were cut down and burned. The next year I saw them northwest, coming directly toward my place. They struck the square of the public schoolhouse, and I could not prevail on the trustees to cut those trees down and have them stop right there. Finally they let them be cut and piled them up in the street, and strange as it may appear they did not spread more from that point. It is unaccountable to me why they did not. Those limbs which were piled up there were as white as if they were covered with snow. They were swept by the wind for months, and yet afterwards be less in that vicinity than there was at that time. Some of the trees have some on now, and then there will be a space where there is none at all. It is rather discouraging that we cannot enforce this law; of course, we have got to have a remedy, and I should appeal to the horticultural officer to know whether they are satisfactory to him. It is a question whether you can enforce any rule unless you can show a jury that it is a law founded in right, and that it has a practical bearing.

Dr. Chapin: In regard to the matter of insect pests and the laws relating to the extirpation of them, it has been a serious question before the people of the State for several years to induce the various Legislatures of the State to provide suitable laws, under which this work could be effectually done. It has proved, in fact, that no Legislature which we have had that has treated upon these subjects at all has been willing to do all that was necessary in the matter, to uphold to uphold the hands of those to whom it had delegated certain powers, but yet not sufficient to enable them to accomplish the work. Moreover, the greatest difficulty of all has been thas there has not been a provision of money sufficient to secure the performance of work. It is to a large degree a matter of manual labor and also mental labor, and the overseeing of the work of those who do perform the manual labor. The fact has been very apparent all the while, that there is a lack of money somewhere to pay these people for their services. If I may be permitted to express an opinion in regard to the whole subject in one word: it is not a lack of authority to proceed, in our present laws, but it is a lack of money to pay for the necessary work to be done. As has been already suggested, the great object in this work is to have it done simultaneously over a large section of country; we will take Los Angeles for example: this cottony cushion scale, so called (the *Iscerya purchasi*, which is the technical and proper name for the insect, and it should be known as such), is now confined to a certain region of country. It does not as yet extend over very many square miles, but in order to have this work effectual in any instance the work must be done simultaneously over all the region of country thus infested by this insect, and in order to accomplish that there must be a provision for money for the labor to do the work. It has been truly said in this convention that there are twenty—yes, a hundred different remedies, any one of which is effectual for the destruction of this insect pest—provided that the work is done all at one time, and then that the insects will be reached by the preparation,

whatever it may be that is used for their destruction. It can be done by manual labor; by many of the very cheapest insecticides, and by the most costly ones. It may be done by simply reaching every individual insect; and, of course, if a few were left untouched by any of these different preparations they are ready to propagate their species, and the tree and the entire neighborhood surrounding becomes infested again. I have come to the conclusion, deliberately, that it is not so much the particular preparation that is used, and I do not advocate any one particular preparation for that purpose at all. I care not what people may use, provided they will take something that will destroy the insects, and provided we all work together harmoniously for the accomplishment of that one object, and at one time. If people will ever be got to that point and will proceed upon that basis they can exterminate these various pests. Even the coddling-moth can be exterminated if it be done in that way; but the only way in which the coddling-moth can be exterminated in this State or in any locality which may be sufficiently isolated to prevent the spread of the larvæ from one point to the other, must be by the destruction of the fruit upon which this insect feeds. If that should be done for one season, the codlin moth would have no fruit upon which to deposit her eggs, and the larvæ when hatched from the eggs, having nothing to feed upon, would die. That is the only way in which that insect can be exterminated, though we may suppress it to a great degree by careful work. I might carry this illustration to many of the other insect pests. There has been no test case brought forward so as to determine by the process of the courts to what extent our laws are constitutional or valid. It is not absolutely necessary that that course should be pursued, but if it is, there must be a provision of money to pay the expenses of carrying on such a suit. It has been often hinted and said that the State Board of Horticulture ought to do all these things. We have no authority given us by law to pay the fees of lawyers or the expenses of court proceedings to test these questions. Individuals may take them up and carry them forward to such a conclusion, and that they have the privilege of doing, but there has been a general tendency on the part of all concerned as far as possible to avoid the trial of such actions. In this county it has been the desire and the intention, I believe, of those in authority to avoid as far as possible bringing to trial these matters to see whether the law is valid or not.

Another suggestion I would make is that there must be entire harmony prevailing between those in authority. There are state laws which are sufficient in their effect to carry forward this work authoritatively, fully and effectively, and there are county laws and other ordinances, and where there may be full harmony existing as to the methods by which work shall be carried on, it may cause confusion and disastrous result, instead of the thoroughly effective results that are desired. Now, I would suggest as I did to the County Board of Supervisors of Los Angeles last summer in meeting with them here: that they provide the means necessary for the carrying on of this important work in Los Angeles county, and that they work effectively under the laws which are already in existence, that by so doing the work may be harmoniously carried on, and possibly produce the results which we all desire. The State laws which govern these matters all recognize the County Government Act of 1881, which is still upon the statute books of the State. There is no conflict of authority between the provisions of that act and the subsequent laws passed by other Legislatures. Of course, if a conflict should exist, then that in so far as that is concerned, becomes null and void, but wherein there is no conflict, work under that law can be carried on, and in order that the officers who are there named may be paid for their services (for no man will work without compensation in some direction for his services), I suggest that they work under their County Government Act, appointing county commissioners, and these commissioners in turn appointing local inspectors from the number of quarantine guardians which had already or previously been appointed in accordance with the law relating to the extirpation of fruit pests, and in that way paying for the services of those guardians, and at the same time giving them a legal standing which would enable them to go without any warniug or any request of any person, but by virtue of their own authority, onto the premises of any person and examine the fruit trees there, or any other trees that might harbor insect pests, and directing that they should be cared for—be treated in such a manner as might be prescribed, providing the parties themselves fail to do the work with any remedy that they might prefer previous to that. Now, I think this work should be carried on in full sympathy with this plan, and I think that we have all the legal authority that is necessary in the matter, and if money is provided in that way the work can be accomplished as to give the utmost satisfaction to all the people of the State.

Mr. Shinn, of Alameda county: I had prepared a resolution which I thought of offering at the conclusion of the last discussion touching this point, and I will with permission read it, as it may form something of a basis for discussion, or at least it may limit discussion somewhat, since it is pretty generally admitted that the laws we already have are in the main sufficient to govern the case, provided we pursue the proper course; but if that be not so and if the fruit interests of the State are what we suppose them to be, it is a matter of enough importance to occupy the attention of the Legislature. Perhaps after hours of discussion we may not arrive at anything more definite than to say that if the present laws are effective we will execute them, as it has been suggested by Dr. Chapin. There is a point that needs to be agitated, and that is the lack of money to carry out the laws as they should be carried out, and my resolution is simply to this effect: Resolved, as the sense of this convention, that we must have the money to carry out this act, and the Legislature must authorize the counties or municipalities to make such appropriation under the cover of law. We must have the quarantine protection, and the men who are doing the work must be go-ahead, live men, with authority to do all they can to eradicate these pests.

The Chairman: I would add two other points to this resolution; that is, that it is the sense of this convention that the scale bug can

be eradicated; 2d, that this can be done only by universal and simultaneous action in the infested district.

The amendments were accepted.

Mr. Bettner: I would like to ask Dr. Chapin if in his opinion the fruit growers of this State could not ask the Legislature for an appropriation? I would like to offer a resolution that it is the sense of this convention that such an appropriation should be made.

Mr. Garey: I think if I understand the matter we have a State law that provides for a quarantine, and provides for the Board of Supervisors at the request of five taxpayers to appoint a commission, and that the inspectors appointed by such Board shall be the same parties, it being arranged between them, that is appointed by the State officer as guardian, and in that roundabout way they can get due compensation for their work from the Board of Supervisors from the several counties. It seems to me that the act of legislation that we need now is a direct law providing for the compensation of the guardians. The law is only inoperative because it does not provide for compensation. We need an appropriation by the State for the purpose of enabling us to exterminate this pest, and to ask the Legislature now to pass a law on the subject when we already have a law that we have never undertaken to enforce, does not look well.

Mr. Shinn: It was not the object of my resolution to ask for a law that we already have, but, as explained by Dr. Chapin, it was that that law should be backed by a sufficient appropriation to put it into effect, and not by any roundabout method.

A Delegate: If I understand the law, it is effective and satisfactory; all we need is to have the backbone of our Supervisors braced up a little. We have filed our claims for our county and it has been allowed out of the general fund, the same as any other appropriation. Why should we go before the Legislature again? We have under our county Government bill an amply sufficient law, the same as any other law. If Mr. Garey's horse has the glanders, the Board of Supervisors can appoint a commission and go and investigate that matter, and kill his horse instantly, and Mr. Garey can't help it. If we look upon this as a common nuisance, I think it is operative; all we lack is action on the part of the Board of Supervisors.

Dr. Chapin: A fatal mistake was made in the matter by our last Legislature in not making provision for the payment of the quarantine guardians for their services. It was against my protest that the bill was introduced in the manner in which it was. Senator Whitney of Alameda county introduced the bill, and knowing that he was to do so, I requested him personally to postpone the introduction of the bill until certain changes could be made in it, with reference to that very matter of providing compensation for the quarantine guardians (officers which it proposed to appoint), and stating that unless that was done it would prove ineffective; it would kill the actual work which it was desired to carry out. But Mr. Whitney introduced the bill the very next morning, the moment the President gave the opportunity for the introduction of bills, and no opportunity was given to any person to suggest any changes. Then the argument was used, and carried out by a number who were friends of the measure in the Senate and in the Assembly, that it would not be wise at all to attempt any changes or amendments to the bill for fear that they might defeat entirely the passage of any bill that might help us. As I said in the first place, the Legislature haven't been willing to do all that was necessary, but they have done enough, so that in this roundabout way, as Mr. Garey has suggested, it could be still made effective provided the Supervisors would do their duty: and I must say, without any qualification whatever, that Boards of Supervisors in the different counties of the State—and I do not refer to Los Angeles particularly, but I include that with all the other counties of the State—must be given credit for having done a great deal. They have devoted a large sum of money to that purpose, and I feel they should receive the thanks of the community—but there has been the disposition on the part of those of all the counties of the State to guard against the waste of money, and in their great care to guard against waste they have permitted themselves to go to the other extreme and haven't had the courage, the moral stability of purpose, to say that this money shall be devoted to this purpose. We, as fruit-growers of the State and taxpayers, have the right to demand that they shall do these things. There is where the greatest difficulty exists in my mind; if the Supervisors of the different counties will furnish the money by their votes to carry on this work it can be done effectively in the very way in which we are working, under the very laws that we have now.

Mr. Rice: In reference to the law that we have, and are working under in this county, it seems to be effective. We have not had a test case. We have not tried particularly to get a test case, but in three instances where we had determined to make a test, when the time came the parties having the scale bugs came out and cleaned them up. I wish to say one word on behalf of the Supervisors of this county, that they have answered the call of the mass meeting held in this city of the principal fruit-growers of the county, asking certain appropriations; that they have, so far as it was possible for them to do it, met every claim and given every dollar asked for, though probably in not exactly the terms that was asked. The expense bills last month were something over $800. They were asked to offer a reward of $1000 for some sure cure, and they did it at once. I simply state this in defense of our Supervisors, so that the strangers may know that we are in dead earnest down here, and I would say, also, in regard to the County Board and the guardians appointed by our State Board, the guardians of the State were appointed as inspectors, so that we work under both laws, and we think that there is no doubt but what it is effective, and so do the people that have scale bugs.

Mr. Aiken, of Santa Cruz: In listening to this talk about the laws, it is very clear to me that the law is as good as it can be drawn; there can be no hope of an appropriation from the Legislature. I was up there during the time that this bill was under discussion and I am certain that no appropriation could have been obtained—not a dollar. The theory upon which an appropriation would be asked would be, that the city of San Francisco and the mountain counties where they raise no fruit, should be taxed to kill the cottony cushion scale in Los

Angeles, and the San Jose scale at San Jose. It is very doubtful whether the Legislature would ever appropriate money from all the taxpayers of the State for these local purposes, so the law as it is drawn, placed the power to appropriate just where it belongs in the hands of the Supervisors of the county. They know the needs of their counties, and they can appropriate the money belonging to the counties, and if this law is only enforced, I would say, go ahead; there are no obstacles in the way; take possession of a man's orchard by force if you choose. If he thinks you have damaged him let him commence a suit himself for damages. Let him enjoin you when you take possession of the trees and the burden is on him. You do not need any test case at all; they may carry it to the Superior Court and pay all bills; let him do it, but let us simply stand firm and make a brave front. As to the question about the constitutionality of the law, there is nothing in it. It is in the power of the Legislature to pass it, and no Superior Court in this State, as I should judge, would ever declare it unconstitutional. Sufficient unto the day is the evil thereof. That act of the Legislature is constitutional until it is declared by the highest court in this State to be unconstitutional; so that being the case, enforce the law; appropriate that money by the Board of Supervisors, and if anybody wants to fight, let them do the fighting.

Dr. Chapin: I would like to make an explanation in connection with questions concerning the Supervisors and their duties in this matter. While the Supervisors of some counties are in sympathy with this movement and are willing to aid by their votes or their voices in furnishing money for the carrying on of the work, yet there are other Supervisors of other counties that are not willing to give this encouragement. President Cooper has just told me that those of Santa Barbara county are not willing to do this. Consequently, while those of Los Angeles may be willing to do all they can in in reference to carrying out this work of destruction of the cottony cushion scale, yet the Supervisors of Santa Barbara county, lacking in that intention and willingness, will continue the cottony cushion scale at Santa Barbara, and in due course of time—supposing we were honestly free from it here by our careful and expensive work—we would become invaded again by that pest from Santa Barbara. Going right to my own home, I might say almost the same thing with regard to our Supervisors in Santa Clara county. They have not been willing to do their duty in this matter of the insect pests, and there has not been a single Board of Supervisors since I have lived in that county that has been willing to undertake the work of providing any adequate compensation to the officers carrying out this work and which power rests with the Supervisors. I would be heartily in favor of a law in connection with this matter which should place the authority of directing the work in one body as the law now does in the State Board of Agriculture, but yet the Boards of Supervisors in the different counties seem to think that they have power granted them to provide ordinances under which they may appoint officers to carry on this work, and that their authority is only by the Board of Supervisors; that they do not recognize in any way the authority of the State law. There is one point of the clash and inharmonious action in the matter; I would favor law which should compel the Board of Supervisors of the different counties, where it is necessary to do so, to provide sufficient money by their votes to clear them from these insect pests, and giving the authority for doing all this work or rather letting it remain just where it does in the hands of one secondary organization that is legally constituted in the State Board of Horticulture. If that is done and the Supervisors recognize that authority, and being compelled to furnish the money necessary to do this work we could very soon arrive at a solution of this problem of the insect pests.

Mr. Aiken: I want to say in reply to Dr. Chapin that where the law authorizes or directs, say, a Board of Supervisors, to do a certain thing, where there is no discretion, that they are to do a certain thing, the law points out a remedy for that—a writ of mandate would lie against the Board. It is a very simple proceeding; it could be done by a Superior Court, and it would be a question of whether a Board of Supervisors is above the law, or whether a Board of Supervisors will obey the law. They are not above the law of this State, they are not above the writ of mandamus, and it would be a very nice little case, and I would almost give $100 for a chance of trying it in the Supreme Court, and establishing the right of the fruit-growers to command the obedience of the Board of Supervisors to the plain letter and spirit of the law.

Mr. Bettner: Can you compel the Board of Supervisors to make any appropriation?

Mr. Aiken: Where the law allows a discretion, the Board of Supervisors to a certain extent is a legislative body, but when they become executive officers the law points out that that Board shall do a certain thing and they have no discretion, and I think a writ would lie. I have not examined the matter of late, but I think it is a clear principle of law; but anyway, try it, demand the writ, and I think the courts would issue the writ, and then it would come up on its merits of whether the Board of Supervisors can oppose the proper execution of the law passed by the Legislature of this State, or whether they can decline to make the appropriation that the law points out that they shall make.

Dr. Chubb: It is not only what can be done, but what will be done. A man that will go and attack the Board of Supervisors in the manner described is a difficult man to find. It is sometimes just as easy to coax as to force. Our own Board of Supervisors, as has been explained by Mr. Rice, when we approached them and asked certain things done to carry out the law, said: "We will do whatever the public sentiment requires or asks." We met in the southern part of the county, the Santa Ana valley, and circulated a petition and got over 300 names asking the Board of Supervisors to enact the regulations or ordnance under which we are acting in this county, and they at once acceded to that request, and I believe we have got as effective a Board of Supervisors in that direction as will be found in any other county in the State. Now, if the Board of Supervisors have any power, they get it from the Legislature. Granting that the law is all right, if the Board of Supervisors feel that the enforcement of the law is to the interest of that county, and that

the fruit interest is the interest that they are bound to respect and support, they will then at once make it their work. Why not? They are the servants of the people, and the most prominent interests of their county are the ones that will enlist their hearts and hands, and are the ones they are the most ready to support. All they want is the expression of public sentiment, and that is the reason I offered the resolution, and I believe it is the duty of this convention to make this expression, and to show that we want the backing of the law and of the money influence to protect the fruit interests of this State which we believe to be the coming interest.

Col. Webb: I had not intended saying anything on this subject because it is really one that I have given, perhaps, less attention to than almost any other, for the reason that it has not been my duty to consider it as much as other questions, but I have considered it enough to see the many difficulties in the way of enforcing the law. I am compelled to differ from Dr. Chapin and my friend Mr. Aiken. They seem to think, one that the law is proper and all that is necessary, and the other that there is no difficulty whatever in enforcing the law. Now, the law says that the Board of Supervisors *may* appoint quarantine guardians who shall receive so much per day for their services to be derived from the damages assessed upon the party whose property is condemned. Now, a man, to obtain money in that way, must be a more abandoned creature than I believe is in this hall this evening. I doubt very much whether my friend Mr. Aiken would willingly take the position of quarantine guardian in that beautiful locality of Wright's station, and there enforce the law and condemn a man's orchard and say: "Mr. Jones, your trees are infected and I require of you to cleanse them immediately, and if you don't do it I will cut them down and I will compel you to pay the charges and costs of this action, and then when the man refused to do it," as he probably would, because they are stubborn people some of those fruit-growers, then enforce the law and have the property attached and sold and the money realized from it. Now, Mr. Aiken, if you would do that you would never want to run for county judge in that county. Then there is another thing: it has been said that the law provides that the Board of Supervisors should do a certain thing; that it is obligatory and mandatory, and they are bound to do it; that they must not suppose that they are above the law, etc. Oh, no; nobody supposes that they are above the law, but the question is, as in the other case, whether Mr. Aiken or anybody else that desires to live a quiet and peaceable life and meet his fellowmen on good and social terms every day; whether he wants to go to work and be the instrument of enforcing that; I doubt it very much.

A Delegate: The new constitution has given ample power to the Board of Supervisors in any matter that interests the county, to make the allowance and levy taxes on the citizens where it may be necessary; they have a right to pass a no fence law, they have a right to regulate the school taxes and anything of that sort that concerns the people they can do, and in the new constitutional convention that thing was discussed thoroughly, and if we have a nuisance here of any kind the Board of Supervisors have power to levy a tax on the people to eradicate that, but then you have got to leave that to a vote of the people to see whether they ratify it or not. But the Board of Supervisors have got the power in each and every county to levy a tax on its citizens, is the way I understand it.

Dr. Kimball: With all due deference for the enthusiastic member who comes from the Santa Cruz mountains, where they raise such tremendous apples, and where they insisted for a long time that the codlin moth could not live, I can say there is an unlimited field for his work at home. The question, after all this discussion, resolves itself down to the simple proposition whether the people themselves in every locality are so intensely interested in the work of getting rid of these insects, that they will carry it into politics, that they will carry it into the election of the Board of Supervisors, that they will carry it into the election of judges, and so interest the body politic that they will be willing to act in response to their request. That is all there is for the suppression of insects: for the people to act unitedly and sincerely and as if they meant business. That is the only solution I can see. The resolution as amended is adopted.

A letter is here read from the Los Angeles Produce Exchange, extending the privileges of the room of exchange to the members of the society, also a letter tendering a similar courtesy from the Los Angeles Board of Trade.

On motion of Dr. Chapin a vote of thanks was tendered to the Produce Exchange and to the Board of Trade for the courtesies thus extended.

Here the convention adjourned until Tuesday morning at 10 o'clock.

The convention, on the morning of the second day, was called to order by President Cooper.

Committees Appointed.

The Chair appoints committees to judge of the fruits on exhibition in the hall as follows:

On Citrus Fruits—Thomas A. Garey, of Los Angeles; James Bettner, of Riverside; J. W. Gray, of Chico.

Deciduous Fruits—Sol. Runyon, of Sacramento; Col. E. E. Edwards, of Santa Clara; S. McKinley, Los Angeles.

Miscellaneous Fruits—A. T. Hatch, of Suisun; I. A. Wilcox, of Santa Clara; George Rice, of Highland.

Fruit Marketing.

The Chairman announces the topic of discussion for the morning hour: "The Care in Selection, the Kind and Size of Packages, the Marketing and Shipping."

Mr. Webb: I have a box here from Mr. Coronel, which was sent to him at my suggestion from the East, which is recommended by Parker Earl as the best box which has ever been used in shipping fruit; it is here where all persons interested can have an opportunity to examine it. I should never have thought of sending for anything that was advertised had it not been for the recommendation of Mr. Earl, knowing his reputation as one of the leading fruit packers of the United States, and as a gentleman of the highest integrity. It is here for you who desire to do so to investigate it. [The box was made of slats. Inside there was an arrangement of pasteboard, very much like the patent egg carriers, each fruit being given an apartment by itself, with holes for ventilation.]

Mr. Wilcox: I have been shipping small fruits for the last twenty or twenty-five years—blackberries, strawberries and the like—and I would like to look at that box very much. In importing plants or anything of that kind, where they go a great distance, they build openings at the top. I have had plants shipped to me, forty varieties of strawberries; every one of them came dead, because there was no current of air inside. I had them duplicated afterwards and all came through in a healthy condition where there was an opening at the top. The box shown by Mr. Webb seems to have the principle of ventilation about it—(explains the construction by illustration with the box itself)

Mr. Webb: It obviates the necessity of wrapping; you get fruit of the right size, and select them with reference to the cells, and it obviates wrapping.

Mr. Garey: Is this a new package, or one that has been used and tried and proven by persons that have tried it heretofore?

Mr. Webb: I think that the letter Mr. Coronel has from the manufacturer is accompanied with the statement that Parker wrote to that effect, and that is the best answer to the question.

Mr. Hussman: While I do not know anything about this package, and seen it for the first time now, I know a good deal of Parker Earl, and say this—that anything he recommends he has tried, and wouldn't recommend it otherwise.

Mr. Williams, of Fresno: This matter of the package is a prominent one in reference to shipping fruit; if we get a package for the proper carrying and the proper handling of our fruit, we have overcome a great obstacle in transporting of the fruit of the Pacific Coast to the great centers in the East, which is really our market. One of the great points of the shipping is in the exorbitant cost of the package. For instance, in packing a carload of grapes for Chicago or Kansas City, or anywhere else East, the mere cost of the package is more than the original cost of the fruit. If you put your grapes at $20 a ton, which is very low, the packages and the loading in the car will cost you 240 odd dollars. The great point in shipping is to lower the expenses. Our grapes are cheap enough; we have the consumers on the other side, the transportation and the package figures very largely in the general result. I have tried grapes in 4-pound baskets, and it works pretty well if you do not have any delay on the road. For the carrying of pears, we have used 40-pound boxes. They are not a success; you have to spring the tops on too tight and too hard to get them there in proper shape. Mr. Porter told me that he can spring them on so that they don't shrink a great deal; but novices in the business get them about half full. Now, we want a package in which we can get them there in presentable shape. Another thing, the package, as it stands to-day, creates too much pressure on the center layers. We must have a taller package, and one that will not cost us too much. For other fruits, the smaller you have the package the better, to obviate the pressure on the fruit.

Mr. Garey: In Southern California perhaps the most important question in the matter of shipping fruit is the shipment of the fruits of the citrus family. We are looking for a superior package to the one we now use, and we will hail it with delight. The main point in shipping oranges is to prevent them from rubbing or chafing one another, as Mr. Williams said as to other fruits, getting loose in the box and in picking up the fruit shaking it about and bruising and damaging it. The boxes shown appear in the first place to be cheap; that is an important point. We want a cheap box to ship our fruit in, as well as a cheap remedy to kill the scale bug, and these boxes, as they are made there, it strikes me that unless the oranges are selected and sorted especially to fit those spaces closely and snugly they will necessarily shake about, and that will bruise the oranges and destroy them. All the spaces that do not fit would have to be filled up with paper or something that would make them fit snug and close.

Dr. Chapin: After closer examination of this package as it appears here, it seems to me it would be rather a slimsy affair, the very slightest touch will rack it in various directions with a single nail in the laths which are on the side. I should think the package would be very likely to fall to pieces, handled in the way in which fruit is in this country, or on any long journey. I should rather be afraid of the package myself, from the appearance of it.

Mr. Garey: I suppose those compartments are not arbitrary, they can be changed to suit the size of the fruit.

Mr. Webb: That is what I tried to state, that they have boxes of different sizes and cells, to accommodate the different sized fruits.

Mr. Milco: My opinion is, that if that can be made strong enough, it would be one of the best things we have, for the simple reason that in order to bring our fruit before the public we must have it of different sizes; this idea of putting a layer of good fruit on top and small on the bottom ought to be done away with for the sake of our future prosperity, and that little box strikes me as one of the best things to accomplish that purpose. You can't put a big orange in a small space; you have got to have it of the size to fit it, and then those packages ought to be marked numbers 1, 2, 3 or 4, or whatever the size is, and the fruit will sell accordingly. The main point is as Chapin says as to the stability of the box. I know that when you put 40 or 50 pounds of fruit in a box it has got to be pretty strong, the way freight and expressmen handle boxes. They don't care how they handle them because they have no interest in it, and unless a man watches them or ships himself and places it on the cars himself, the chances are that the fruit, when it gets on the other side, is not fit to do anything with.

Mr. Wilcox: I think that the objection to the box that is here referred to can be very easily remedied. I have shipped fruit myself in a box similar to that, merely with a flat thin piece of board between the layers. The way we did, we braced the box by nailing a cleat along the outside at each corner. We took common laths and nailed it right over those places, and one at each corner and one at the end, and I never had any complaint, so far, as to fruit moving around in those compartments. The difficulty can be remedied easily, too, by taking a piece of paper; of course, the fruit ought to correspond in size, nearly, to the cell. One thing I want to say in regard to the ship-

ping of fruit here: It must be handled carefully, and the railroad hands do not do so. They throw our chests off twenty rods from where we want them. I paid the railroad company, fifteen years ago, $1000 freight on strawberries at 80 cents a chest, and sometimes I would have to go ten rods away from the depot to get the chests. When I passed through Florida last winter, I saw a circular of the railroad company as to shipping, and especially requesting that any carelessness be reported to headquarters. And yet, on this coast they are proverbially rough in handling the fruit. I would never ship fruit anywhere without putting it on the car myself, or some party who is interested in it themselves. That is the only safety you have. Mr. Block, who ships the most pears in Santa Clara county, don't trust anybody to attend to it for him; he has his own packer and his train shipper.

Mr. Chapin: I am very glad the point was brought by Mr. Milco, regarding the size of the fruit throughout the entire package, and not a fine layer at the top, and then the balance of the box made up of inferior fruit of all sizes and descriptions. A little personal experience in that matter may not be uninteresting to the members of this convention. Owing to the necessity of my being absent from home almost all my time, it is an absolute necessity that the details of my orchard work be left to hired help entirely, and my experience has been this, that however honest and faithful men may intend to be, and frequently are, yet they are oftentimes careless in their work. It is not as though the eye of the manager or the owner was upon them. Only the other day some packages of fruit sent to the San Francisco market were called to my attention when in the city and I was told that they came from my orchard. The box was opened on the side and shown to me. I said that never came from my orchard; my fruit is never packed in that manner. They assured me that it was so, and I became convinced that that was the fact. When I went home I opened some boxes that had been packed by my foreman in that same manner, and found precisely that description of things existing, notwithstanding I had repeatedly told him that it would cost him his position if he practiced any deception in the packing of fruit. I had positively forbidden him, giving the most arbitary instructions against anything of that kind, and yet, in the face of all that, the work was done in that way to a certain extent. Fortunately, it was but a few packages that were done in that way, but the man's excuse was that the fruit was there and he thought that he might as well make use of it and get what he could for it. It is needless to say that that was not repeated, but this very method of packing in certain sized partitions with one class of fruit through the entire box is a most excellent one, and that part of it is to be commended most heartily, and if the cheapness of the box and the strength and the stability of the package can be secured at the same time, so as to be profitable for the fruit-growers to use, there is no doubt but what it would be a most valuable article.

Dr. Frey: It would be a very easy matter to have it made so. If the boxes were going a short distance, it would do very well, but if they were going further you might have to put in a few nails, and they would go along very well; or, as the gentleman remarked, you could put slats in on top of it. You can put a slat on each end, so that the pressure in the box would come on the slats instead of coming on the top of the box, and that strengthens the box very much. In regard to grading fruit in the box, I think it is a matter of great importance, that it should be insisted on by the society that every man should have his name on the box, and be personally responsible; and if a man puts in poor fruit let him take the responsibility, a d let everybody know who it is. The difference will soon be apparent.

Mr. J. M. Gray: I would like to hear from somebody who ships fruit to Chicago if they think peaches could be shipped in that box, without rubbing. If so, it would save a great deal of trouble to the shipper. We know it is no small task to get a carload of fruit, and wrap each piece in paper, and I fear that the paper that we have now in this State is not the right thing to wrap peaches in, especially if they become the least bit moist. There seems to be a taste of the paper in the fruit. If we could arrange some way of shipping without going to that expense and trouble it would be a good thing.

J. M. Hixson: I have a great many letters from parties whom I have been doing business with this year, which I expect to lay before the fruit shippers and give them my advice in regard to a great many matters pertaining to shipping. In regard to Mr. Grey's remarks as to shipping peaches, I think it would be good if they would contract those spaces considerably to have the fruit fit. It may not be generally known that the fig, in the green shape, can be shipped through in good order. We had them from several different parts, and only, I believe, in one instance did they come through in good order, and that was when there was but one layer in the box. They sold at extravagantly high prices, and demonstrated to my mind, that whatever package was successful, the cost of it would form but a small item if we could get the fig there in perfect order. The peach, too, at times, of course, will sell at a price in which the package would hardly cut any figure. In regard to the strength of the package, that is one thing that I want particularly to call your attention to. I have a number of letters, and I will read an extract from one to show the sentiment on the other side in regard to the package. In case of getting a light package, a pound or two or three or four pounds to get that package strong enough, so that it does not fall to pieces, is no consideration. We have one car of plums in which the stanchions parted. They were put into an old-fashioned car and arranged to give ventilation, and when they gave way the bottom of the fruit slipped forward and that threw it on an angle, and the package was so light that a good many of them burst, and the plums ran out. In such a case the cost of the packages was a very little consideration. I will read this from Boston: "I hope your friends in California will see the necessity of stronger packages. We consider this fault one of a very serious nature, and the sooner it is remedied the better it will be. For short distances, no doubt, they are 'O. K.,' You see, he says it is a very serious matter in regard to the packages, for he finds the fruit comes out of order in consequence of the package being so light that it springs. Now

I have one from Hamilton, Canada, in which the gentleman speaks on the same matter of the package. In regard to putting the small fruit on the bottom, anything of that kind is not going to take in the East, because every package there is opened. They open the package, or they put their hand on it, and they have become such experts that they are satisfied if it doesn't give, and if it does they then sort it out and find where the defective ones are and then take and supply them with fresh fruit, or if it is not packed tight enough they draw them together and put in fruit enough to fill up the package, so that a man who is shipping with a view of success is not going to put in poor fruit or inferior fruit more than once or twice until he will see that it don't pay. There is no place I have ever done business where a man's name is worth so much to him as it is in the Eastern market, because they go right after ham. As soon as they find an article is well packed, they seek for that brand, and when they say I will give you so much for that mark teey don't mean I will take all of it; they m an I will give you so much for the privilege of going through it, and if it is not all right they are going to reject it. It is no use to put up inferior fruit, or over ripe fruit, or anything of that kind with a view to success. There is another important thing, and that is uniformity of package. If you are going to have twenty pounds in a package, have twenty pounds; if you are going to have forty pounds, have forty pounds of fruit. This is for two or three reasons. One is, that a man makes a calculation when he sends it out for retail how many pounds he is going to sell. Another is, that the express companies take their fruit at a certain rate per box. They cannot take any five, or eight, or ten thousand boxes and distribute them to the different places and weigh the different lots; they mark them if it is peaches or plums; they take them as twenty-two pounds; if they are pears and apples and things of that kind, they take them at forty-six; so that if man has got eighteen pounds of plums, you see he is paying the extra expressage on it, and all those things are taken into consideration.

Mr. Aiken: I will say as to the redwood box in the county of Santa Cruz, we buy them at two cents, peach and grape boxes, and we can manufacture enough to supply the State of California, at that price. As to that box, it may be of great value to us in the State enterprise which you hear about; we propose to do one thing if nothing else; we propose to manufacture the best boxes that can be obtained for the actual cost, and sell to fruit-growers at the actual cost; and what can be manufactured for 20 cents, you will get for a little more than 10 cents.

Dr. Chubb: As to orange boxes, when talking about it in the East this summer with a commission man, and when I told the cost of the box, they said you can do better than that by shipping your boxes from Maine by sailing vessels during the seasons when you don't want them, and get your supply during the fruit season. He spoke very confidently about it. He said he was confident we could get our supply of boxes much cheaper than 16½ cents, which we were paying for orange boxes.

Mr. Milco: I will give you my opinion. I know that one firm in this State is shipping a great many carloads of lumber around the Horn to all the Eastern ports, and it has been done for the last two or three years, and I have been told by Mr. Smith, of Stockton, that the lumber is so cheap in California that they can't make a cent out of it, and the only money they are making is by shipping East. You can imagine as to that, if they ship around the Horn from Oregon and Washington and make a profit.

Mr. Chubb: Then they ought not to charge 20 cents for orange boxes.

Mr. Conger: I think the boxes made in Maine are made of birch, and not of pine. I was told once that they could be bought in Maine for seven cents. Mr. Wood can inform us on that point. Did you not write to Maine?

Mr. Wood: Yes, sir, we have received prices from so many different places, but I can say this as to that box, when we were in business here, shipping a good many, we could buy our cases in the East and pay our freight on them, and lay them down here for less money than we could get them from San Francisco. In my experience those boxes can be bought in the East and brought out here by freight as cheap as they can be manufactured at home by our present manufacturers, unless they have improved during the last two years.

Mr. James Bettner: I was in New Orleans last year, and inquired as to the cost of the Florida orange boxes. They get the most of them from Maine, and I found that the Maine boxes, coming by water transportation, cost about what it costs to deliver Truckee boxes at Riverside (about 14½ cents); and the Maine orange box is to me a very unsightly box. It is made of basswood, is very thin, and has to be bound with hoops, and it warps all up and out of shape if exposed to the sun or air at all. They have found so much fault in Florida, even, that they use a local box in some places there, and are turning out a pine box that is a good deal similar to our Truckee boxes.

A Delegate: I think if you can ascertain the lowest price you can secure these boxes in the East, and then will examine the boxes made in San Francisco and on this coast, and the prices, you will find that we can procure boxes, or any thing else in the wood line, a great deal cheaper here than you can procure it anywhere on the Eastern coast. Only a few weeks ago I was up on the Canadian Pacific railroad at Victoria, and they were very much agitated there on account of the Dominion Government assessing the lumber there, 8% advalorem, and 25 cents a tree for their lumber, and they sent a remonstrance back to the general government, trying to overcome that, saying it would ruin their market in the lumber line, and prevent them from competing with the California and the Puget Sound lumber country. Now, we have box manufacturers and everything in this country, and we have the wood; there is wood enough in Eureka, Humboldt county, to make boxes and box up all the fruit, and the trees, and everything else there is in this country, and we can furnish them just as cheap as we can get them from Maine or anywhere else in the world, and just as good, and I will tell you that I think it will be to our best interests to keep this money at home. We have bright prospects in this country, and I think anyone can see that it is going to be the distributing point for all the southern

country. It is so recognized by all the railroads in the country. If we look a little to our own interests, without sending any money abroad, I think we will all fare a great deal better. I do not disapprove of ascertaining what you can procure these things for. While I was in British Columbia a man started some soap works. He sent to his neighbor a block or two away for boxes. He said: "I will charge you 15 cents a piece." He says: "Send me 1000 boxes." It so happened that there was one of Hobb's men there. The soap-maker told him his trouble, and he says, "I will send you up some boxes," and he did send them from San Francisco, going the trip by sea to Victoria. Just one week before he could get them from a block away. That would show you if it need that the work can be done just as well here as anywhere else, and as good as any you can get abroad.

Mr. Wilcox: I live where we make boxes, in San Jose. One thing should be borne in mind. In the first place, all the best timber that is used for boxes, from chests down, was held by a combination. When I bought my first blackberry chests, twenty-five years ago, I paid $9 for 100 chests. I can now buy those chests, of a better quality, for $3. We had no machinery to make a good chest; now we have machinery in San Francisco that will dove-tail the corners in the best possible manner. We have the same in San Jose. I have paid for strawberry boxes, to hold 8 or 10 pounds, 11 cents; I get them now for 2½ cents. I can buy the common strawberry box, holding a pound, for 8-10 of a cent apiece; that is all it costs for little raspberry baskets. So far as that is concerned we have been making them there in San Jose as cheap as can be made anywhere—lumber is much cheaper than it is in the East. We can make a box cheaper than any part of the world. Our redwood lumber is even being sent East to be manufactured. In New Orleans they all wanted to know what it could be got for. They use it to make coffins. They are making coffins at Santa Clara by the quantity. We are supplying all this coast, the Sandwich Islands and Mexico and all this country with them. We don't want Eastern lumber. When we have machinery in competition that is all we want. I wouldn't look to the East for a box hereafter, and I don't think we will need to. It may be that we will want to combine with this organization on shipping and that we will want to make our own boxes, and I believe they can be made here cheaper than anywhere in the world, for there is no part of the world where we can find lumber so accessible.

Dr. Congar: I don't think there is a question but what boxes can be made here as cheap as in any part of the world. That is dodging the point. We want to know whether they *will* so make them, that is what we are after.

Mr. Milco: I think that the fruit interests of Southern California are so extensive that the fruit-growers of this State are strong enough to go to work and make their own boxes. If they cannot get them cheap enough they should put their shoulders to the wheel, and go to work and put up their own factory and see what they can do, and I think they will find they can get their boxes very cheap.

Mr. Hixon: I think we are losing sight of the main point of this matter, which is ventilation of the fruit more than cheapness of the boxes; and while we discuss the latter part of it we ought not to pass over this very important matter. You see the box, which is shown here, is ventilated from below, and the vapor or moist atmosphere rises upwards through the fruit. I want to call your attention to one fact demonstrated in the receipt of some cherries we had this year in Chicago. We had one carload, in which there were about 700 cases, shipped in the ordinary crate—such as are used in the shipping of grapes—and bye the bye, I would not by any means recommend that as the proper package for cherries. I do not suppose there is any man who would have paid $100 for the carload of cherries at the depot when they arrived. We, of course, have to pay freight anyway, even if the fruit is all ruined. We have given bonds for that beforehand. There were 15 crates in that lot that the man had stretched brown paper over the top of the crate so that the paper was about half an inch above the top of the cherries. On top of that paper was laid the slats, so as to prevent pressure coming down to mash it. It was arranged so that there was a space between the cherries and the paper, and a space between the paper and the top of the crate. In one of those crates the paper had got torn and fell down upon the cherries; that was like the balance, covered with fine mould, of a thin cobweb appearance; the other 14 crates were in good order. There was no other crate in that lot that we could ship outside the city of Chicago. By taking the tops off the boxes and exposing them to the air this cobweb, like mildew, passed off of a great many, and the local buyers bought them, and we got about $800 out of that whole carload. That paper absorbed the moisture that arose from the bottom or from the cherries, and the cherries were in good condition. A good many of the cherries and other fruit that were not wrapped had so much moisture on the top of the boxes, that it was absorbed by the wood, until the top was discolored. Now, if a fruit box is ventilated so that this moisture can pass off, it seems to me it is of vital importance. So far as the box business is concerned, none of us doubt but what we can make them as cheap here as anywhere else. The only question is, do we do it? I had some occasion to get some boxes in Chicago, and paid for the first lot of white wood, 25-lb. boxes, eight cents, and then got a bid from three different parties for 25-lb. boxes clear pine, at seven cents, and then made for six cents. I had occasion to have some figs packed the other day in San Francisco, and the man who packed them assured me he had to charge so much, because he had to pay nine cents a piece for the same size box, and I remonstrated with him and he tried to get them reduced. He said he could not get them less than nine cents. I have no doubt but what they can make them here just as cheaply as anywhere else; but the question is, do they do it? But the main question, as I have already said in this matter, is ventilation.

Gathering and Curing Fruit.

The chair announces the second topic of the day: "The proper time to gather the different kinds of fruits, the curing, etc."

Dr. Congar: I rise to make a few remarks upon that subject, in reference to the orange

and lemon. I know very little about the deciduous fruits that are growing in Southern California at this time. When I came here 10 years ago, I paid 10 cents apiece for apples raised in Oregon, a dollar a pound for butter made in Sacramento valley, and everything in proportion. Now the local production of such articles is abundant. I have had some experience in regard to handling the oranges and lemons, as to their condition of ripeness, and their effect when picked under certain conditions. I will speak of the lemon first. I paid more attention to that than the orange. It is a well known fact that the lemon in this locality requires certain treatment in order to produce a fruit of first quality. I may say first and foremost, soil has something to do with it, and something in the matter of treating the trees as to the amount of water the tree is to get, etc. I would speak of the lemon as it is taken from the tree, and as far as I go, I I speak of the Eureka and Lisbon lemon. They have in the San Francisco market a lemon called by the commission men there the "California Sicily Seedling." I rebel against that name. We have no such lemon in this country. We have a Sicily from the bud, and it is as different from the seedling as can be. The lemon I wish to speak of is the Sicily bud, the Eureka, the Lisbon and the Genoa. Those lemons, under the treatment I have pursued, will produce a lemon that we challenge the world to surpass. I am willing to put up 100 boxes against 100 boxes imported lemons. The lemon wants to be slightly colored on the tree before it is picked; it wants to receive from the soil all the properties that will make it perfect. It must be picked at that stage with the best of care, without much handling. I mulch my trees with straw and lay the lemons immediately under the tree. It matters not whether it is damp or dry. Of course, if it is a dry portion of the year, I leave them there a less time than though it were a damp season of the year. They will remain under the tree for weeks if it is a moist atmosphere. I don't place them over two or three inches deep, and they will cure down into a lemon which I will challenge the world to surpass. By this process the skin loses moisture, and becomes soft almost as a glove, but it is hermetically sealed. There is no chance for the oxygen of the air to penetrate that rind, and it is the oxygen of the air, as we all know, that causes the decay in all fruits. If you keep out the oxygen from the fruit it will never decay. Hence, the necessity for picking your fruit with a great deal of care. If lemons are handled as I have described, you need have no fear of foreign competition. Now, as to the orange: I find it to an advantage to pick the orange with some care and allow them four or five days to shrink; that is, to lose a surplus of moisture in the rind. It is when the rind is distended with this surplus of moisture that scraping it with the finger in picking will rupture the rind and the oxgen of the air takes hold of that little spot. It commences to decay. Hence, you want to pick them with this care and put them in a box and lay them away under the tree and let them shrink for three or four days. It depends somewhat upon the ripeness of the fruit. They should be in such condition that when they are put in boxes they will not shrink and become loose so that every time the cars shake they knock one against the other. There is a secret of great loss in our fruit shipped to the Eastern market. If they are shrunk before they are packed, you can pack them just as tight as you can pack an apple, and they cannot give in your boxes. If you will go ahead with the sorting practice you can pack them so tight that they will scarcely move in transit to Chicago.

I rose to give my experience in picking off the tree. Those who buy the fruit off the tree, and pick and pack them under the tree, huddle them off to the railroad the next day; they throw them just as you throw sacks of potatoes. They take them up in boxes and throw them on the wagons, and I have seen the juice run out of those oranges as they packed them. That is the way some of the commission men handle our fruit, and we suffer in consequence. That is the reason why I am in favor of some kind of an organization, either Southern California or Northern California, so that we may stop this terrible work. If, when we pick the fruit when it is ripe, let it lose the surface moisture, and pack it closer, we will get along without much loss. We can raise as good fruit as any in the world.

Mr. Hixson: I would like to say one word in reference to Dr. Congar's remarks in regard to picking the orange and letting them lie awhile. I think there is so much point in that, that everyone ought to pay some attention to it. It is very well known that there is no man in California who is as successful in shipping apples as Mr. De Long, of Marin county. At his place they pick their apples in a box, one-third larger than the box they pack in, and they put it in an apple-house and let it stand there for a given length of time that may suit them, but not less than a week or 10 days, and pack it from that into the boxes that they ship in. They ship to Australia and New Zealand, and other distant markets with perfect success, and I think that it is because they let the extra juice pass off in evaporation. I think the Doctor's remarks on that point are worthy of a great deal of consideration.

Dr. Chubb: My experience does not agree with the Doctor's theory completely. This last summer, in the month of June, I had sent to me in a western city, two or three carloads of oranges that were sent on rather as an experiment. They could be bought very cheaply in our section of the valley, because they were the remnants of the orange crop, had ripened up later and had to be picked up later, and a great many of them were very ripe, and wouldn't be considered fit for shipment on that account. They were picked indiscriminately, believing that they would at least, pay the expenses, and were packed rapidly without due care. I saw them as they were opened in the commission houses, and from the very fact that the skin had dried, they came through in better order than oranges that I shipped in March. That experience convinced me that we must cure our oranges before shipping; they were dried on the tree.

Mr. Rose: I have had various experiences with shipping oranges and in picking lemons. I have spoilt more lemons I guess than any man in the State of California in experimenting, and I feel very sure that Dr. Congar is very correct in all that he has said of his own knowledge as to the lemon business. I have no

doubt, it is true, not only to me but to everybody who has lemons. As to the orange, I have had a different experience from Dr. Congar. Last year I went upon the theory of picking and keeping my oranges two or three days under cover in a large building that had the ventilation of open doors and open windows, but oranges which had been in there would not keep as long as those packed out in the field and shipped at once. I have found that oranges that are kept out of doors will keep better than those which are kept in any kind of a house, no matter what kind or what ventilation. So far as the orange is concerned, there is a necessity for the people of this county, especially, to find some way of cleaning them, and washing oranges has had the effect of making them decay very easily, although there are modifications I think in the practice which did not result that way. We have tried to rub them off with a brush, and if immediately shipped they will decay very quickly—much more quickly than if they had not been rubbed. It is the same way with the washing. We have in our neighborhood a very painstaking gentleman, Mr. Dobbins, who washed his oranges last winter and kept them out-doors, with some protection of shade, perhaps, and they went as well as if they had not been washed. It is my belief we ought to have a drying-house, and I believe we will come to it yet. You can take an orange and put it on the mantel piece. You can keep it there and it will never decay—it will dry up. You can keep it there until it gets as hard as grain. Again, you can put it in a trunk and have it among your clothing, where the moisture is taken up by the surroundings, and it will never decay, and will finally dry up. Now, the reasonable supposition is, that if you had a dry house with trays, with the fruit only one deep on a tray, and some heat passing over them, taking off the surplus moisture, the orange would keep to ship to any part of the world. I believe it will pay to do it. I will take an instance where I ship a carload a day. Last season being a dry season, I had no trouble, but you take another season with wet winter rains almost every day, and the orange will take up a great excess of moisture by the rain. You can take any orange, pick it immediately after a rain, pack it immediately after,and it will decay before it gets to San Francisco. You must wait till sunshine comes and dries it out to a certain extent. For that reason I think it will be necessary for the men who ship largely to have a dry-house and take off the surplus moisture, and then we can hope and expect that we may ship oranges to any part of the United States without any decay, but I must say that Dr. Congar's theory about keeping them for a while in a house I have not found correct.

Dr. Congar: I did not say in the house. I keep them on the ground under the tree. I had Mr. Rose's experience in keeping them in the house.

Mr. Cooper: Referring to the remarks of Dr. Congar, I find it is very dangerous to give theories. In Southern Europe, and with the Spanish and French, they are about equally divided on the subject of seedlings. There are seedling lemons up in the Exhibition hall, raised at my home from the seed of a Sicily lemon, and I have sold them in San Francisco side by side, at precisely the same price with the imported Sicily lemon. They are up there now and I wish you would all help yourselves and see what they are like. I have the budded Eureka lemon, and I have tried to test both of them, and I have decided that my seedling Sicily, as Dr. Congar calls it, is the better of the two.

Dr. Congar: I refer to the seedling lemon that I am acquainted with here. Now our Eureka lemon is a seedling, and Mr. Wolfkill has a seedling that is a superior lemon. I am not speaking of that, I am speaking of the seedling lemon—great big things with the rind as thick as a citron.

Mr. Cooper: Mine I keep four months. These up-stairs were picked about four months ago; picked by a Chinaman, without any particular care. I have kept them six months.

At this point a recess was taken until afternoon.

Afternoon Session.

The chairman announced the program of the hour: "How the fruit-growers are to dispose of their fruits without coming into competition with each other as to prices for the same quality and kinds of fruit."

Address of H. P. Livermore on Fruit Shipping.

Mr. President, Ladies and Gentlemen, Fruit-Growers of Southern California:—I esteem myself fortunate in having the privilege of speaking to you on a subject which I conceive of such very great importance that it needs a great deal of talking about, and I may say that, in so speaking to you, I shall give you not an address, but a business talk. I speak to you as a business man who, something like ten years ago, became interested in the fruit-growing proposition in vineyards and orchards situated in Sacramento county, where for the last six years, until this present year, I have had not only large proprietorship, but personal management. In those six years I have had to ship to Eastern markets fruit and grapes of various kinds to the different houses. Now, in all that period of six years, I have never been able, as a proprietor of such interest and as a manager of such business, to predicate one single element of certainty, season by season, for that interest. As a proprietor of such property, I have always felt that I was in the dark, that I was shooting at random, that I might and my game, or that I might have to respond to the drafts for deficits. This year particularly has such been the case; and when the realizing sense came upon me that no contract can be made for the placing of California fruits in the Eastern markets, that we had to gather them at random, that we had to take our chances, that we had to run the gauntlet of competition with all California producers who were similarly situated—I said to myself this is a condition of things that can not but be disastrous. It means nothing less than confiscation of this property interest if it continues. Naturally, holding that view, and being, as I say, a man of business experience, accustomed to the solution of business problems, I turned about to see what there was in the situation that would afford any protection in the future, or what there might be in the

situation that would threaten a permanent continuation of such things, reaching, in advance, the conclusion that if such was continuously to be the condition of the fruit interest of California I wanted to gracefully withdraw from it and pocket my loss.

I have had extensive familiarity, for all these years, with the Northern fruit interests, derived from personal inspection of the produce of that section. I then considered it was necessary and proper for me to know something of your Southern interests. I came South, and passed nearly two months quietly going about your various communities, feeling the pulse of the situation; and it did not take me long to find out that the condition of things which was exercising us existed quite as seriously here as there. It did not take me long to find out that you had the same problem to solve, that I, as an owner of such property, had, namely: that the property which I thought last year was worth one hundred cents on a dollar, might be of doubtful availability this year, and under the present condition of things.

Let us not go into particulars; let us not publish unnecessarily this condition of things, but let us take counsel together whether it must not be admitted among ourselves that our property interests, our values in such property, are seriously threatened by the present condition of the fruit trade, and would be, in a great measure, overturned by the continuance thereof. Such was my conviction. I returned to San Francisco with my mind pretty thoroughly made up that the situation was as bad as I had anticipated, and probably was beyond present remedy. I say present, for even then I could not bring myself, as a business man, to think that men of sagacity, of good judgment and of experience, such as I thought the fruit-growers of California were, would long tolerate such a condition of things.

Shortly thereafter there came an announcement of a convention of the "Fruit-Growers of California," and I naturally attended that convention with no very definite idea of what would come out of it, but with the conviction that the thing to do was for the fruit-growers to get together, and that the convention was a means of so doing. Being there, I found various suggestions, and, in connection with others, who, like myself, were earnestly moving and endeavoring to remedy existing evils, I was placed upon a committee to take in hand this proposition and suggest a remedy. That committee was composed of gentlemen who are doubtless familiar to you all, but I will, for the purpose of a full understanding, give you their names: William H. Aiken of Santa Cruz, R. J. Trumbull of San Francisco, Abbott Kinney of Los Angeles county, A. Bloch of Santa Clara county, Horatio P. Livermore of San Francisco, F. C. De Long of Marin county, M. Estee of Napa county. That committee was instructed to inquire into the whole subject, and to propose a method for redressing the evils that oppress us. They held serious deliberations; at first without being in complete unison, latterly reaching an understanding to justify a report in the convention.

Resolved, That it is the opinion of the majority of your committee that the fruit-growers should organize a corporation confiding the management of their fruit for Eastern shipment to a duly qualified board of directors of the said corporation for the protection of their mutual interest and the disposal of their produce.

Resolved, That the capital stock of said corporation shall be $250,000, represented by 250,000 shares of $1 each, and that the fruit-growers shall have the privilege of subscriptions at the rate of one share of stock for each acre of bearing orchard and vineyard of shipping grapes, the same to be an operative capital fund for mutual protection purposes.

That report was taken in hand by the convention; it was deliberated upon, discussed in all aspects, through one entire day, and then, after further discussion on the second day, was finally unanimously adopted, and the same committee were directed to take charge of the business of working up the details of co-operative union or corporation, and generally putting it into effective motion. I did not know at the time when that committee was appointed, how much was in store for the members of it in the way of solid work, but in the six weeks that ensued from the date of the first convention to the holding of the second, I had a realizing sense of it. We, however, did what we could, in the crude condition of things. I say crude, because an interest so vast and widespread as the California fruit-growers' interest is necessarily crude until it is *organized*. We did what we could, however, and, returning to the convention, we reported a plan; that plan was objectionable in many respects to various of the localities of northern California, because they had then conceived local ideas from local preferences. Let us not say prejudices, but preferences, and preferences, perhaps, well founded in many instances. However, after long discussion and some modifications, all the interests were harmonized, and a general agreement was reached, and it gave birth to the

California Fruit Union,

A corporation which I now represent, and to which I now call your attention. I may say before going further, that in the incorporation of this Fruit Union, the capital was considered by the committee as advisable to be restricted to the acreage of orchard now existing in the State—at first the bearing orchard; afterwards they opened it to all orchards, without distinction. It was the opinion of the committee, from the best information procurable, that 100,000 acres would cover the entire area, and it is still their opinion. For that reason they recommend a capital of 100,000 shares, or $100,000. It was held by the committee that that was sufficient. It was held by the committee that in all probability not that entire amount could or would be subscribed; but, that as a maximum amount, it was sufficient to start with, or rather to place as a maximum limit. The convention thought otherwise, and in the desire to give the complete latitude, and to provide for the future increase of acreage, they, by resolution, increased the capital stock to the amount of $250,000 or 250,000 shares. Of course, the committee were perfectly willing to accept that amendment, inasmuch as it involves nothing as to the amount of stock that should be issued, that being limited by the acreage, and it is still the opinion of the committee that the capital, which is now spoken of as $250,000, will practically, under the operation of this scheme, fall considerably within $100,000. Now the whole

theory and motive power of this scheme has always been, and is to-day, "co-operation;" we make a corporation because the law defines that we must, but the idea is co-operation, a "co-operative union" of the fruit-growers, which they themselves shall officer and shall control, and for their sole benefit and profit. Be there little or much profit, it is for the fruit-growers, and in that sense we feel that we are justified in laying a very considerable stress.

Perhaps, in order to give you a clear understanding, I had better read to you the articles of incorporation and by-laws. [Mr. Livermore read the articles of incorporation, also the by-laws as adopted Wednesday, November 11th, 1885, and as published in the RURAL PRESS in the issue of November 14th.]

The by-laws provide for nine trustees, but it is competent for the stockholders, when they finally adopt by-laws, to increase the trustees to 11, and it probably will be done to satisfy any territory requiring additional representation, and to create a local Board wherever necessary.

You will notice that the stockholder is in all cases associated with, and identified with, producing acres. Our original plan of estimating acreage for representation was to restrict it to orchard and to shipping grapes, but as we got into the subject we found that small fruits were very likely to call for a standing in connection with our transportation, particularly if the now probable feasibility of the cold storage car were demonstrated, and the vegetable transportation would enter very largely into the question, and that the acreage that could, should and probably would, be devoted to vegetable culture for Eastern shipment would be very large; and for the additional reason that the vegetable shipments are a matter of great help to us in early shipments, it was included, so that, as the corporation now stands, the privilege of being stockholders was given to the cultivators of small fruits and of vegetables for Eastern shipment. I have thus read what constituted the articles of incorporation and the by-laws of the California Fruit Union, as considered in the committee's report to that convention. There were, however, two or three points, not placed in the by-laws, which they gave to the convention in the form of recommendations, that have not yet been incorporated into the by-laws, and may or may not be, according to the ideas of the majority of the stockholders. I will read from the report those recommendations, so that you may then have the whole thing as it is likely to stand. [Reads recommendations of committee.]

Now I will call your attention to the fact that, first, this is a Union restricted to producers; second, that the ownership in it is proportioned by acres to the interest in the fruit produced; third, that the ownership of stock is treated as a merely nominal matter; that it is not desired to make it a profit-paying stock—to make it a stock that could or would be sought for as a profitable investment, but simply giving to it an interest barely compensating the capital invested, and letting the bulk of the profit go to the parties who produce the fruit in the proportion that they shall furnish such fruit. Now, I think this corporation, put into effective practice, is "boiled-down co-operation," if I know what it means. The business is done by the producers themselves, in their own behalf, and the profit divided among themselves. The theory in the management of the practical business details, when we come to them, will be that the Union, in handling its business, shall receive from the parties who deal with it, or who ship fruit, the same rates of commission that are now received by commission merchants, or that are paid by producers in the various channels where they now dispose of their produce, and that the Union will then proceed to handle those goods on the most economical basis possible, and whatever surplus is left after paying necessary expenses will come back to the stockholders, or to fruit producers, which is the other name for stockholders, in proportion to their shipments, less the six per cent interest on the stock and the two per cent reserve. Now for a clear understanding of the question of fruit shipments. It is perhaps proper that I should read to you what they have been during 1885 to October 1st. In the reports that have been compiled the committee have embodied the entire shipments of all fruits; but I will not weary you with the details, suffice it to say that the shipment of green deciduous fruits, classified distinctly from the citrus fruits, have been, for the year 1885 up to October 1st, 1025 carloads, almost exclusively from the North; only 66 carloads have gone from Los Angeles. I can now make a similar report on the citrus fruits. These reports have been made in pounds, I have reduced them to carloads: San Francisco shipped 1 car, Los Angeles 1119 cars, Sacramento 1 car; there have been minor quantities shipped from Marysville, Stockton and Oakland, but those are immaterial. The grand total of the shipment of oranges is 1121 cars. These have been distributed to the following points: Denver, 72 cars; Pueblo, 7 cars; Omaha, 62 cars; Lincoln, Neb., 28 cars; other points in Nebraska, 2 cars; Atchison, 26 cars; Leavenworth, 11 cars; Topeka and other cities in Kansas, 15 cars; Council Bluffs, 6 cars; Des Moines, 3 cars; Davenport, Dubuque and other points in Iowa, 51 cars; Kansas City, 120 cars; St. Joseph, 58 cars; St. Louis, 68 cars; other cities of Missouri, 2 cars; San Antonio, Texas, 12 cars; Galveston and Houston, 9 cars; Austin, Dallas and other points in Texas, 12 cars; New Orleans, 5 cars; Louisville, 3 cars; Cincinnati, 28 cars; Cleveland, Toledo and other cities in Ohio, 59 cars; Chicago, 246 cars; Peoria, Rock Island and other cities in Illinois, 15 cars; Detroit, 9 cars; other cities in Michigan, 3 cars; Indianapolis, 19 cars; Terre Haute, Evansville and other cities in Indiana, 15 cars; Milwaukee, 25 cars; St. Paul and Minneapolis, 115 cars; New York, 2 cars; Boston, 1 car; Philadelphia 1 car, other Atlantic cities 1 car. Now, I consider that table to be instructive to the shippers of citrus fruits, as it indicates that, except at second hands, through Chicago, the great Atlantic seaboard, with its vast consuming population, has not even been broached. It indicates that Chicago is what I have heard a fruit-grower very aptly term it, "the dumping point for the fruit of California," and it frequently is that, in a financial sense. Now, too much fruit goes in that direction, and vastly too little to the markets of the Eastern seaboard. Well, perhaps that has been inevitable under the existing condition of things; perhaps it has not been possible to reach the Eastern seaboard; we feel, with reference to

the deciduous fruits of the North, which heretofore have been shipped only by passenger trains, that it really is so, and that, until we get special fruit trains and the consequent reductions of freights which only can come by special fruit trains, those far Eastern markets cannot be reached. Still it is evident, from the foregoing statement, as it is also evident from the statement of green fruit shipments, that the Eastern markets have not been developed at all in proportion to the development of our capacity to produce fruit, and that if we are to go on and produce fruit with the new acreage which stands behind us, coming along to contest the markets with us, to crowd us down into a condition of absolute loss, we have a great deal to do to develop not only the markets that are partially occupied, but the markets that are comparatively unoccupied. Now I think the great necessity of united action in an endeavor to reach and develop those markets, cannot be denied, and that it needs immediate organization of all in interest. It does not do for one locality to say, as did our neighbors on the Central Pacific in Placer county, "We have exceptional facilities; we have choice mountain fruit. It is of high repute in the East, where it has the preference. We are at a very favorable shipping point, and we can get along. We make up our local co-operative organizations and we are getting along nicely." That is what they did say, and one town made a co-operative organization, and another followed, and before the shipping season was over they had five co-operative organizations, and the competition between those local shipping organizations was just as marked, and just as capable of paying Irish dividends, as if it had been individuals, and the result is, those gentlemen have candidly said, We must take shelter under the wings of the general State organization, and they have done it. Now, there are considerations peculiar to every locality, and yet it seems to me, that conceding every claim that any locality may make, it will fare better in a general State Union, in the great congregation, with such a corporation as we have proposed, than if it were standing by itself, each locality by itself. I can see very clearly that, in some sense, there has been too much of the stay-at-home principle among all the fruit-growers of this State, and, not to be misunderstood, I will explain to you what I mean by that. I do not think the bulk of the fruit-growers of California know what has been done and what is being done all over the State, in the way of multiplying means of producing fruit. I do not think the fruit men to-day know what stands behind them in the way of certain competition from the produce of other and new localities. I don't think they appreciate what we have got to handle, so as to shape our markets. Now, to-day's market may be satisfactory to a shipper in one locality, and next year's market may be an entirely different thing, because his neighbor, who has heretofore been a non-producer, may wheel into line as a producer, and push along to the front and divide the market. It looks to me as if you have got to consider and provide against that very thing. The special matter that is to be considered here, at this meeting, is the desirability of a corporation like this, in connection with the interests of this locality, and I ask your attention to a number of points that bare upon that matter. I suppose that everybody in Southern California, interested in citrus fruits, has heard of the place called Florida, and that there is a production of fruit there of the same class as produced by you here, and perhaps, in a measure, with identical interests. Those producers of fruits are far nearer to a market than we are of the far West, and far less burdened with difficulties of getting to a market, it is true that, in a great degree, they do not come to market at the same time that your producers do, but they are an element of competition with you, in certain seasons, and a class of difficulties that assail your interests are nearly identical with the difficulties that they have had, although their difficulties are in a very much less degree. Now I have here a circular which sets forth a prospectus of what is called the *Florida Fruit Exchange*. It is an organization that is gotten up by the citrus fruit producers in Florida, to protect themselves from the difficulties that are almost identical with those you have here. [Reading from a prospectus.] Then follows the plan of the exchange which shows that it is proposed to handle all the fruits from the State under one general business organization, having its headquarters at Jacksonville, Florida, having a board of directors, nine in number, and having the business details intrusted to one general manager, also located at Jacksonville. Now, that is a brief outline of what arrangement the fruit-producers and shippers of Florida have been compelled to adopt under the condition of things that is not certainly as serious as that which exists here. I may remark that they have no such difficulty with their freights, and they have really far better facilities of marketing than you Southern California producers, and I do not think it admits of any argument that what has been necessary in their case is equally necessary with you. Perhaps I have wasted your time unnecessarily in elaborating that point, because it will be readily admitted by all of you that the necessity exists for some form of union or organization that will straighten these questions and redress your grievances. Now, I will take one step further in that same direction, as illustrating the practical operation of such an organization as that just formed in Florida. I have here the instructions that are given by the Florida Fruit Exchange for the regulation of shipments, showing somewhat more of the details of their proposed operation. There is much of it that you will think is mere detail, but I do think that some of the facts that are enlarged upon, as to the necessity of care and selection and uniformity of packing and scrupulous painstaking for the good repute of fruit, ought to come home to us in California. I hold that one of the first duties that should devolve upon the Fruit Union in California ought to be to inculcate the idea that each and every producer, of whatever veriety of fruit, should work to raise the standard of repute of California fruit, either deciduous, citrus, or whatever it may be. Our reputation in the Eastern markets depends upon united action in that respect; more depends upon that than you think, and fruit-producers and the handlers of produce generally are not sufficiently alive to it.

Railroad Rates.

The fast transportation heretofore of green

fruits has been limited to passenger trains, with a charge of $6 a car, subject to all the vicissitudes of the overland passenger and express trains, which was held not to be the best class of transportation, even were the rates thereon very much reduced. In seeking a solution of that question, the committee thought the best policy was to go immediately to headquarters, and seek an interview with President Leland Stanford, of the Southern Pacific Company, because all the elements of transportation from this locality are controlled by Mr. Stanford's corporations. We sent him an invitation to meet us. He responded by meeting us in our offices, and he answered all questions we put to him, and volunteered a great many suggestions. The one controlling idea, in all he said, and he went out of his way to elaborate that, was that fruit men could not expect any better results from their interest as long as they handled it in the unbusiness-like way that they were doing. He said: "Gentlemen, organize your business, make a business basis, so that the transportation companies can make some calculations and predicate something on it, and we then can give you what you need." He said further, "As to any increased facilities or decreased rates on passenger trains, that is out of the question. Our passenger trains are already overloaded, so that we seek rather to increase the rates and decrease the burden of business. The only way out of the difficulty is a *special fruit train*, and, when you come to consider a special fruit train, we need to have an organized body with whom we can negotiate that will assure us a load for those trains. You may think it is an easy matter for us to put on these trains, and say 'here 'are your cars, load them up,' but the result, if we should do that, would be we would have twice the load we could carry one day and nothing the next day, so that it is entirely out of the question. However, I will promise you that if you organize your interests, and if you present yourself to us in such a shape that you can specifically contract for a freight train of 15 cars per day, or every other day, as the case may be, you shall have that train for $300 per car—on a fast schedule time. It shall be a train with all the improved appliances for the safe transportation of fruit, the cars shall not be fitted with the ordinary freight platform, but they shall have the Miller platform, to take the shock off the stoppages, and the train shall be run on a fast schedule time, not stopping at way stations except for coal and water. By that means, being in motion all the time, it will keep up a circulation of air that will be far better for the fruit, and you may be sure that the delivery of the fruit will be better than it can possibly be by the present system of passenger trains. And, further, in response to a specific inquiry, he said he would give us the same special facility of the slow freight train, with a specific time table, which might be nearly as fast as the special fruit train at times, and at other times not so fast, at $200 a car, and that, having contracted for them, the trains were in our control. We could load them as we pleased, and that, in order to avoid any features of monopoly that might be alleged against them, if anybody else wanted *a train* they could have it, too, the idea being that a "special fruit train" is a matter that would have to be arranged by contract. Further than that he said: "We believe in the fruit interest of California as the great interest of the State, if properly organized and developed. We believe that it can be developed so as to overshadow every other every other interest of the State, and to be proportionately freight-producing for us, and, in that view, we want to do everything we can to encourage it; we cannot encourage it as it is, because there is nothing specific that we can encourage; but, when organized and put on a business like basis, you will find that you can have anything that business-like reason calls for. If $300 a c r, on fast time, does not enable you to dispose of your fruits, does not enable you to fill the Eastern markets and to feed these 50,000,000 that want your fruit, we shall know what to do." Now, it seems to me, therefore, that the transportation question is solved, just as soon as we can get together in a co-operative organization. Now we have nothing further to urge in that connection, we think that it might safely be left to the common sense of the fruit producers of California, whether they will avail themselves of such facilities and advantages or not, for the only thing that they are called upon to do to secure them is to

Unite in an Organization,

Which practically costs them so little. Still further, there may be said to be other considerations connected with the transportation question that may be counted on to materially increase the direct advantages in special fruit train transportation. Thus, when damage is met that is not the fault of the shipper, and does not come by the act of God or the stress of elements, it is very apparent that, in handling all such matters, we can get a great deal better satisfaction and more considerate treatment, as an organization, than we can get as individuals. I think it is apparent, too, that the stronger organization we have, the better fruit producers will fare. This may truly be said as to the power of united organization. Something has been said here as to the need of legislation for protection against insect pests. Now, suppose any one locality wants legislation, goes to the legislature and asks it, or goes to congress. You will go home, feeling that you have been insulted all the time by the way you have been treated; but if a demand comes from the *united fruit-growers of California*—not less than 10,000 in number, as they probably are now—if it is put into proper, legitimate shape, with the suggestion that there is an organization behind it, my impression is that you will get a very speedy and favorable response. I think that in all questions of legislation, of dealing with transportation companies, of local good government, of taxes, of assessment of your property, the time has come to say that the fruit producers of California are going to organize to protect themselves, and that they know what power lies in a united organization, and that they mean, within the bounds of reason, to avail themselves of that power, and to exercise it; I say that is a perfectly legitimate thing to do, I say that the individual fruit-grower would be neglectful of his interests if he did not so do. There is a whole mass of questions lying behind those I have mentioned which would suggest themselves to any intelligent thinker, and which would receive a favorable

answer at the hands of a united organized power far better than by individual action. The question discussed this forenoon, of cheap and uniform packing can be easily solved when all act together. Nobody need be hurt, but equal rights to all can be secured in a very little time under an organization.

Now, much has been said here as to local distinctions that procure, as to the different seasons in your particular locality for fruit shipment, as to the necessity, in short, of a *local* organization to adequately represent your interests. I am not surprised at it, but I candidly think that the propositions are not based upon solid reason; you commence to ship your oranges, as I understand it, in January and you ship till May. If you have a local organization you have got to take care of that organization, you have got to take care of its officers for the whole year to secure their services for those four months. In the first place, as I understand it, all propositions that have been advanced for a local organization necessarily call for a very much larger capital than you would need to contribute to a general State organization; inasmuch as you have got to create duplicate facilities and carry duplicate capital; you have got to carry substantially for the entire year the officers and the official machinery for the business of four months of the year that might just as well serve you for four months, and serve the rest of the State for the other months. My business experience divides this proposition into this shape. Suppose the organization enlists the confidence of the whole State, and suppose it goes immediately to work: the first thing to engage it would be the handling of the citrus fruits, and in a couple of months, I understand, your shipments will be sufficient to load special trains, and the contemplated arrangement would give you the advantages of the Southern or Northern route as you might prefer, and, if you have an insufficiency of fruit you can, by joining with the deciduous fruit shipments of Northern California make up your quota of the special trains. Later in the season, when the weather is warm, you, for obvious reasons would prefer the cooler route, and probably would avail yourselves of the Northern route, and, later still, when the bulk of your crop is shipped, and you could not yourselves make up a train, you would be very glad to join in making up a train with the deciduous fruits of the North, so I think you would decidedly profit in that regard. The organization, the officers, and the business machinery of the Union, after handling your business for those months could then immediately proceed to attend to other profitable business, in other sections. From the months of May to October, and sometimes into November, they could be working on the deciduous fruit shipments of the North, and earning profits, so that the persons necessary to conduct your business, as a local distinct shipping business in its proper season would really be no burden to you in those months, but would do other business than yours and earn supporting profits. There would be two months in the year, perhaps, when there would be neither business from the South or the North, and, in my judgment, that would be far less time than is desirable, and could be usefully used in the study and development of the Eastern markets.

Now whatever you may say, however you may view the fruit marketing proposition, it eventually comes down to the consumer; you can't get your money for fruit unless somebody takes it to you. After you organize your business so that you can make up the special trains to get the fruit to the consumer on these reduced rates of freight, which we all concede will be reasonable and justify good expectation for the future, the question is, Where is the consumer? It looks to me that a very considerable amount of work has got to be done in the East, to make the consumption adequate to the supply of California fruit, for my judgment is that the fruit production in California is naturally increasing more largely than the consumption in the East, that is, if left to work itself out. Now we have got to set to work in the East, and we have got to put men there to work out the details of the business throughout the year as we ship. Now you start your cars when you think they are in good order, and you trust Providence that they may get through in good order and find profitable sale. Some of you have had occasion to notice when you get your account sales that they are reported to have come in other than in good order, and to feel as you would like to know of your own knowledge whether that was really the case or not. Well, that may have been an unfounded feeling, and nevertheless a proper organization with its reliable Eastern agents should be made to see to all those things in the East, and to enable you to know for a certainty that the management of the cars and the trains will be such that they can be inspected, in proper form, before arriving at the destination and being unloaded, and to know what the condition of the fruit is, and to report accordingly, and, in the meantime, all who are employed in the corporation, as such Eastern agents, can be working up those Eastern markets. Now, in the course of the work that I have done in connection with the California Fruit Union, as secretary, I have been receiving a great many letters—you would be astonished to see how many, bearing upon the proposition of the development of the Eastern markets from men here and East, who hear of this fruit producers' movement, and who are familiar with the Eastern markets. They all agree that nothing less than a fully equipped and continuously working organization can do justice to the subject of marketing California fruit. You may locally be able to solve the question of transportation for a portion of the year, but if you do you will do it under far greater difficulties than you can under the management of a general State Union, and you will do it in comparative disregard of the development of Eastern markets.

I think I have already alluded to the relation of your shipping for certain months to northern shipments, but I may repeat that your earliest summer shipments, in the judgment of those of your largest producers with whom I have conversed, would stand far better as taking part in the shipments of the "special fruit trains" by the Northern route, with the early northern fruits than they can by themselves on your southern route, and that is so important a consideration that it should not be lost sight of.

I have already suggested the comparison between the effective work to be accomplished by the general organization with that of the local organization. I will recur to that topic to say

that the work of the general organization, will be continuously for eight months in the year, in shipping, and for the other four months in the development of markets, working up statistical information and doing various other things that are of great importance to your interests, although you may consider them secondary to the actual shipping. Now, I do not think they are secondary; I think that if nothing else could be accomplished by such an organization as is proposed than the statistical districting of this State as to its products, knowing who the producer is, where he is, and what he produces, when it is coming into bearing, and when he will be ready to ship, and generally all such information that that alone would this year or the next year be cheap to any and all producers at the cost of the subscription to this Union; and back of all that is the information as to the Eastern markets, and the two together would be far more than equivalent to anything you would have to pay for it. I would point out again that the whole idea and theory of this Union is that each fruit-grower contributes a dollar an acre for a certain class of benefits, be they more or less, and that such contribution is represented by the profit-paying stock. But, taking the worst view, and supposing that the money were given away, I do not think that any of you should hesitate one moment if you were approached by a competent, reliable man, who should offer to you just these advantages, for a fee of one dollar an acre, to be absolutely paid out by you. I think you would consider it cheap.

Now, I have heard inquiry as to responsibility on the subscription of stock. The responsibility is solely this: Our law provided that the liability in subscribing to and taking stock in a corporation shall not exceed the proportion of the amount of the capital stock that is subscribed in the corporation. A party taking $10 in stock may lose his stock and $10 more in it as the utmost. If there be any bugbear in that it is very slight in proportion to the interest and benefits involved. There is another feature of your situation here that I do not think is sufficiently presented as to your local interests. You probably all know that you have a large acreage in other than citrus fruits in these southern counties; that, in the next two or three years, you will be large producers of peaches, apricots and pears, and some other varieties. The tendency, as I see here from year to year, is to increase your area of deciduous fruits. Now, it may be said that there is a large portion of those that are planted with reference to drying, but the fact still remains that it is very desirable to have the opportunity to ship them as green fruits, and it is held by those conversant with the subject that all those fruits may go East and find a ready market under proper conditions. Here, as over the rest of the State, we have not yet begun to appreciate what may be done in the shipment of apples, or to establish any proper system of shipment. Perhaps, in some cases, under the advantages of the cold storage car that is now being offered to shippers at the moderate rate of a quarter of a cent a pound, we may reach many markets we do not now dream of with perishable fruits, so that it is not a proper view of the case to restrict your ideas and conclusions solely to citrus fruits. I hear much, locally, as to the various districts here, with reference to the supposed preference in the quality of production of each location. My idea in reference to that is that the whole thing comes down to one common fact, and that is the Eastern market. It is not what you say, or do, or think, here. It is the Eastern market, the consuming element, that controls. Now the man that produces, in any given locality, a better fruit than his neighbor will get the benefit of it; his brand gives it a value, and it consequently stands by itself and sells upon its merit, and he gets the benefit of it. It may be well said that it is desirable for every producer of California fruit, as you saw so strongly stated in the Florida shipping directions, by every means in his power to raise the standard of California fruits as a class, so that they may go forth with the very highest possible reputation. I do not think it answers for any one community to say we can take care of ourselves. If a man produces the very best of a product and his neighbor is sending to market an article just a little less excellent in character, it is sure to have an effect upon the price of the first, unless there is some regulation, some influence that equalizes the tendencies of competition. I have seen, in the six weeks that I spent going around in your various localities here, a number of instances among my friends, where they found out, after the evil was too late to remedy, that their neighbors had been doing them very serious damage in competing with them without being aware of it, without intending to do it, a thing that could not happen under proper organization. Nor do I think the fact that any region is better in quality of its produce than another justifies it in expecting to stand as well by itself, and distinct, as it can stand in a union such as is proposed. I think, of course, that such benefits may be secured by a local union; but, as I before said, at very much greater cost than a State Union. As to the status of California citrus fruits in the Eastern markets, it is evident that there needs be much work done upon them, and I think the stronger organization we have to do that work the better. It is an undeniable commercial fact that, although we did carry away many good prizes at the New Orleans exposition, the bulk of Eastern consumers give preference to the Florida oranges, if both it and the California are in the market at the same time. Very fortunately for us they are not competing throughout the season, although they do compete to some extent? Now, I think work can usefully be done in doing away with that prejudice and upbuilding the general reputation in the East among the consumers of California oranges as such, and I think the work that should be so done would bear profitable fruit in the organization sales, and in all that relates to California fruit. We must work for the highest possible reputation that can be achieved; we must work here with the producers to induce them to make their product such as would entitle it to that repute, and to pack it in a way that would do justice to itself, and to send it to market in a way that it would arrive in such a condition that it will secure for it the first place as California fruit, and that is the work for a *general organization*. No local organization can do it, for the moment you submit it to a local organization you act upon

this idea. "Our market will take care of itself, and the rest of the State can take care of itself" —that is what it would come to. I have heard a good deal as to the best methods and necessary expenditures for freeing our trees of the insect pests, and I am impelled to ask of what value may they be, or the usefulness of any such expenditures made in that direction, if we do not settle the other proposition of what we can do with the fruit when we raise it, and, while that subject is very important, yet the market question is of paramount importance, and should be dealt with accordingly.

Among the necessary and profitable results of such an organization as suggested, might be mentioned the development of the business in dry fruit. That is a business that may be largely developed under proper handling; for if you go on with your dried fruit shipments, without some efforts to prepare markets in advance, you will find you have overstocked the markets to such an extent that you will get little or nothing for them. Another advantage that you would find to grow out of this organization would be the prompt handling of the question of reclamations. I am aware that certain classes of losses have been thrown entirely upon the shipper that, under proper regulations, could not have been thrown upon him, and I believe that, with a distinctive organization, with proper management, you will get benefits in that way.

There is one consideration that seems to me, in one sense, to transcend all these details, and that is the capital value of our property. It will come home to almost any of you who possess property that when you can run your business, so that you may know that your neighbor is not practically running against you, so that you may know that profitable results may be reached through your products, you have got something on which you can stand financially. I don't think it is a bold statement, I don't think it is one that any of you will call in question, to say that such is not generally the fact to-day; I know that such is not the fact with reference to the property I am interested in. I know that absolutely it has not, under the present condition of things, a market value half what I counted it worth a year ago, and, as I said before, that is my great impelling motive in taking hold of this movement so seriously. Now I say that the very day you have consummated a *united organization*, and the broader the better, then you settle your property values, so that, in comparison to the gains you would make in that way, the contribution that you are called upon to make to the capital of the Union is ridiculously small —so ridiculously small as to be contemptible. I have said something in regard to working up information as to the markets. I do not think it is any disparagement of those who, in the Eastern markets, have handled our fruits heretofore—I say that they have not been able to furnish us any information as to what those markets were or might be. It is not to be expected that they can go far out of the channels of their daily business in disposing of such fruits as come to them, and filling such orders as come to them; and the matter of the creation of new markets, of the opening up of extensions of present markets, was hardly to be expected. It is a matter that requires the investment of time and money, and that matter, in my judgment, can only be effectively accomplished by an organization that is formed—not for to-day, not for to-morrow—but to work continuously for the purpose of making a market that will last and grow for all time, and knowing that behind it is this vast area in California that is coming in and being built up on the Eastern consumers. We have got to do it by working up Eastern consumers; we can't do it by any easy means, we can't do it by any individual operation, and I don't think you can do it by any local action.

Now, gentlemen and ladies, Mr. President while I would apologize to you for taking so much of your time, I really have had a very extensive subject to go over, and being conscious that I have only just touched upon a good many points, I hold myself at the disposal of any gentleman who has any special inquiry to make, to respond to it if I am able.

Discussion on Fruit Union.

A Delegate: I would like to ask one question: Suppose I have five shares and five acres and sell my five acres, what becomes of my five shares?

Mr. Livermore: The proposition is that stock should be transferred only to parties owning equivalent acres. If you sell your five acres to a man who does not own five acres of producing area, such as comes within the provision of the stock, why, he would lose his right to vote on that stock; he would not lose his property in it, but he would not have a right to come into our meetings and vote. He would have his proper interest in the stock and draw his dividends on it, but it is distinctively intended to provide that stock shall not be voted that does not hold an interest equivalent in producing lands. A man buying the land is eligible to hold the stock.

A Delegate: My idea was, supposing he refused to take my five shares—supposing he refused to receive them?

Mr. Livermore: You might be in such a position as to lose five dollars.

Dr. Congar: I would ask the gentleman to correct the matter in regard to the shipment of oranges. Los Angeles has not shipped 1100 cars; Riverside must have shipped 400 and San Gabriel at least 175 carloads.

Mr. Livermore: I will merely say in explanation that the railroad reports have placed under the heading of Los Angeles all the shipments from this district, and do not give credit to any of the other points at all, because I suppose they take that to be the terminal point. I think that is a proper correction.

A Delegate: There is another question I would like to ask: suppose I should take five shares of stock: would I be permitted then to sell my crop, providing I thought I could do it to better advantage to some other parties at home?

Mr. Livermore: For local consumption. The idea is that so far as crops have a destination to Eastern shippers whether direct or indirect, it should be through the Union so as to protect the Eastern shippers.

A Delegate: What would be the consequence supposing I should sell to some local dealer in Los Angeles, for instance, and he should make a shipment outside of the organization?

Mr. Livermore: The consequence would be that he would pay twice as much freight as the

special trains of the organization. You understand that the privileges of special trains are proposed to be limited to the organization. We should expect any party who should take stock with us, would do it with the idea of faithfully observing the common interest of protecting Eastern shipments. It would not be to his interest to let his fruit go in the direction where it could come in conflict with our Eastern shipments. If it should be sold to an outsider it would not compete because they can't put it on the special trains and I think the result of this union would be to control absolutely all Eastern shipments. Unquestionably you can sell to anybody you desire to.

A Delegate: Would $300, according to Senator Stanford's proposition, pay the freight on a carload of fruit to New York City, or simply to Chicago?

Mr. Livermore: The rate is only to Chicago, but with proportional rate to other points, less to shorter points and more to Atlantic ports.

Mr. Williams: Suppose we make 14 carloads of fruit on Wednesday and can't get the other car. What are we going to do then?

Mr. Livermore: Well, we had this question up before Governor Stanford, and we asked him if that rule was cast-iron and whether we have got to live up to it and pay the freight whether we filled it or not. He said: "Gentlemen, I can't in advance, lay down the rule, but here is the fact: If you are organized and doing business in an organized and business-like way and find that you do not just reach the point of 15 cars, we shan't trouble you as an organization." That is about what he said, meaning thereby that he would do the best he could, and if we would do the best we could as an organization we should be dealt with with leniency and tolerance. I consider from that that if we could not make up the full 15 cars on any given day he would take what we could make.

Mr. Williams: Another question: Suppose in my way I do not care to ship through the organization and want to go to Mr. Porter. Shall I pay Messrs. Porter Bros. their 10 per cent commission and the organization 10 per cent commission?

Mr. Livermore: Not if you are as good a business man as I take you to be. This has been about the rule in handling the Eastern shipment of fruit; the producers in their various localities will be staying home minding their business. They do not know what other localities are producing, but would just as likely be impressed with the idea that what was scarce with them was scarce everywhere, and some of these people would come out about a month before the season for shipping, and they make it their business to do what our local producers are not doing; they keep their eyes open and their mouths shut, and when they get through they know just what are the facts with reference to the production of the whole shipping area of California. This is what I know they do, and they have done it repeatedly under my observation. They then go to a given locality where they think the fruit is most plentiful, and they pick out the man who they think is most in the need of money and likely to be the weakest, and get a standard price from him and so go all around and use that as the criterion, so that the producer is practically competing with such a condition of things all the time and has been.

Dr. Congar: There is another point, perhaps it has slipped your mind, but I will try to bring it out; it is in regard to the competing lines of railroad. Now, fortunately or unfortunately, for Southern California, we have, according to the papers, two lines over which we may be able to ship our fruit; one is styled the Atlantic and Pacific and the other is the Southern Pacific. Now is it not possible that Mr. Stanford and the Atlantic people might have a falling out and it might work as it sometimes does, that the Atlantic and Pacific people should say to Mr. Stanford, "We are going to try and secure our proportion, or perhaps we are going to secure the control of this fruit." Now if we should have been bound up in the meantime with the Southern Pacific Company how can we extricate ourselves from that contract when the other line of communication might say they will take our fruit for one-half, and if we join the association where we are absolutely bound, we lose the opportunity, perhaps, of taking the advantage of these circumstances. Now this has just come to pass. We do not know that it will work out as practically as I have suggested, but there have been intimations that point a little in that direction. While I am on my feet I wish to say this on behalf of Pasadena, Los Angeles, San Gabriel and other points, that knowing the people out there, being myself one of the oldest settlers, I doubt very much whether, under the existing circumstances, we can get the consent of the people to go into the organization described this afternoon, although I intend to join it myself, and, may I also be induced to join others here. We have got to make this matter clear and if there are any difficulties connected with it they must be explained away.

Mr. Livermore: As to the matter of railroad competition, either present or possibly in the future, I believe that a close understanding does exist between the corporations that does away with any probability of competition. It is a well understood fact, for all that the newspapers may say, that there are binding papers signed that close that up, and even supposing the contingency that a subsequent rupture might come that would bring about a competing interest here, I do not doubt that in any contract the proviso might be made that the rates would be subject to subsequent modification from competing interests, and that is one of the things that such an organization could accomplish when a local organization could not.

Mr. Milco: Some time ago I wanted to ship a carload of goods to New York to our office there, and I applied to Mr. Gray to find out whether he would not take our goods through New Orleans and by water communication to New York for less money. I said: "You run the whole line clear through and you only own a portion of the other road that runs as far as Ogden: you may just as well give us a lower rate." He said: "No, we can't do any such thing; we would have to submit such a proposition to the Transcontinental Union and tell them all about what you desired, and every one of these companies gets a certain proportion, no matter what company secures the freight." It is immaterial whether the A. & P. takes the oranges from Los Angeles or whether the S. P. takes it. There is no danger of the A. & P., or any other railroad, at present, trying to run over this big railway association that exists now, because I think they have got it

pretty well fixed to run it for a few years longer.

Mr. Rose: There have been several meetings of this kind, and these same questions come up from time to time. They are all questions that can be arranged hereafter. Now, if I would go to anyone of you, you would say this is a good thing; but when you come to act you are slow, so that it would seem as if it were a very bad thing. Is it a fact that we want an association in this city or county, or in this district for any purpose? If you say yes to that, then why don't you do something to that end. Here is a Fruit Union in the State, which certainly can have some members, even of each locality; it certainly can do some good for any locality, because, substantially, the expenses of any one locality will be the same as for the whole State. If we organize here an association for the protection of oranges and lemons, what is it we have to do, I ask you? We have to have somebody to distribute this fruit, and not only one man, but several men. You have got to have one man in every principal city in the United States, and in order to place it there for sale and get the lowest commission and the best men, you have got to sell it yourself, by your own agents. If you combine with the North with their deciduous fruits, the same people will do all the work. I ask you for yourselves, isn't it a fact that the same men can do all this? Then, if it is desirable, what is the risk in this thing? You say that you have 20 acres of fruit trees, and you wish to market the fruit; you have to pay $10 or $20 at the outside, and that is not likely to be called for at once. If you will come into this thing you won't have to pay half of it. And what do you get for it? You have the right to ship with the fruit-growers, and that in itself will more than pay you your $10 or $20. As far as what Dr. Congar says as to another railroad company that may ship cheaper, there is no compulsion to force us to take the train at all. It is only when we want a train, when it is possible for us to make up a train, that we have it. That is not individually to us, but it is to the whole State of California. If I have a train I can have the same rate, but by having the State organization, by combining a great many shippers, we may make up the train. That is the object of the organization, and if we have the opportunity to do that we will be sensible to do so. We can go to anybody that will do our work the cheapest, and to one railroad or to the other.

So far as General Stanford is concerned, he met this committee not as a railroad man, not as a man to make money out of this affair, but he met them as a man who had the good of the people at heart. [Applause.] He met them because he wanted to see this State flourish and he said to them there are millions of people that will eat your fruit, if you will only present it to them in a way that they can buy it. Of course they have their fruits, but what are they? We have a different variety of grapes, on this coast; they are different from any they raise back there. Our California apricots are better than those they have, and we can place these fruits in the market there and at reasonable prices, not at 50 cents a pound, but at such a price as we can sell them.

Now you gentlemen are talking all the time about oranges and lemons. What do I see when I go abroad in some portions of our own county? I see fields of apricots, fields of apple trees, of prunes, of plums. What are these people to do by and by? They will want a market and they will find that they are not having as good a market as they would like to have. If you have a local organization, can you take care of them too? As far as oranges or lemons are concerned, it is a monopoly to this extent that you have to have water, for substantially you cannot raise oranges or lemons without irrigation and we have one acre perhaps in a hundred that we can irrigate in these southern counties. What are you going to do with the rest of it? People are continually coming in here and settling our plains and making gardens without any water, and what are they planting? Planting apricots, pears, apples, peaches, etc. And what are they going to do? That is not an easy thing to say, and if anything is done you must do it yourself. The trouble is people foresee too many difficulties. You say this may be wrong, and that may be wrong and you do not do anything. There may be some little things to look about and all that sort of thing, but this Fruit Union is to be advantageous. By means of it we will have privileges and can, by reason of being able to load cars, distribute our fruit nearly all over the United States by having agents in all the cities, and there will be an opportunity to sell to the best advantage. Gentlemen, you will find the necessity of coming to this, and why don't you do it now?

Dr. Frey: I think that the most conservative fruit-grower in the section of country that I come from about believes that it is time to do something, or we will have to leave fruit-growing to some benevolent individual who is inclined to grow fruit for the good of the country. I don't like the worms to eat up my fruit, and I think it is just about as bad as to raise fruit and give it away. I think all the difficulty there is in picking the fruit and packing the fruit can be taken care of in quick succession. We can pick the fruit and we can pack it, and we can load the cars, but we can't dispose of the fruit; neither can each locality send an agent East to make arrangements for disposing of the fruit. Therefore I say, and I think every one must say, that it is necessary to have some strong body that can do two things: one is to dispose of the fruit and the other is to make arrangements for the transportation. In my locality we load about five cars a week. Suppose the railroad company was to load five cars a week: they would say we don't care about five cars a week; but if they were to load 100 cars it would make a difference. Again, if you have agents in the East, as you ought to have, traveling about all the time, when the fruit comes to a place that is fully stocked they would send it to some place that is not overstocked, and then have a man there to see that the cars are unpacked and the boxes not all jammed to pieces. Your agent is traveling on a salary, and he is discharged when he don't do his duty. Then we are not so much at the mercy of the commission men. They all, you know, are honest men, but then it don't do any harm to watch an honest man, and if we have agents in that way traveling about and picking out some of these commission merchants that we think are partially honest, and if they don't do their duty we would say to them, "You can't handle any more California

fruit," and I think they are very likely to be have well. If you should say to them, "Now you can't have any of our fruit," they would say, "There is plenty more;" but if they knew they could get no more, they would know what to do. Therefore I say the main body would do us a great deal of good, and I think it would cost very little. But I see there are some difficulties in the way. One is that California is a very large State. Those who have not traveled over it do not know that, but it is, and the central body in San Francisco is very far off from the northern part of the State, and very far from the southern part of the State. Now a body sitting in San Francisco would seem very vague and distant to parties in the southern part of the State. They do not know them, and do not know whether to believe in them or not, but I think they can be got over. I don't think there is any difficulty to have sub-societies in the different localities, say Los Angeles, Stockton and Sacramento and further north of the fruit-growing interests. I do not believe in a president and secretary salaried; they are all very fine for the officer, but not for the society. and in each of these places we can have a board of trustees who do not want anything except in some cases their traveling expenses. These men would be in direct communication with the parent society in San Francisco. If we had any communication we could make it to Sacramento instead of to San Francisco, and if we had a carload of fruit, instead of sending to San Francisco we might send to Sacramento; but at the same time, the main business that we want to do is to sell our fruit, and that is done by the parent society. I can see the good of that and I can see that all these little details can be made right by it. I can see the difficulties, but I think they can all be obviated.

Mr. Sallee: This question of the importance of organization needs no discussion. I, in common with every fruit grower in the State of California, have thought a good deal upon the subject, and we are all a unit upon that question. We know that the time has come when an organization is imperative. It is not necessary to discuss that question any more; the great object to be obtained is the distribution and sale of the fruit in the East. That is where the money comes from; that is the great object to be attained in this organization. In order to accomplish that object, there are two other things necessary, and one is the collecting of statistics; the other is the loading, picking and shipping the fruit. Those two things are necessary in order to accomplish the one great object of the distribution and sale of the fruit, for from the distribution and sale of our fruit we receive the benefits. It is this that is for the welfare of the fruit-producer, and upon this principle generally I am a democrat and I am in favor of States' rights. The only question is, is this practicable; has there been a practicable solution of this great problem of the distribution and sale of fruit? Now, these gentlemen come down here with less than five per cent of the fruit-growers of Northern California subscribed to this organization, representing to us the accomplishment of that great object in the North, and this is the object that must be accomplished. Every fruit-grower knows it must be accomplished; the question is, how are we to get at it? We have to go on the principle of States' rights. Where is the American citizen that would say that this Government would be a practical thing were Congress to have the supervision of every State in this vast Union? We must go upon the same principle that the Government goes; we must have States; we must do what is suggested in the paper read as by-laws, that the general manager shall district the State into fruit-producing districts. Now, he has the cart before the horse; these districts must create the general manager, just as the States of the Union constitute Congress; the district corporation and organizations must constitute the central organization, they have commenced at the wrong end of it, there is no mistake about that. Now, what is practicable? It is a practicable thing that in every locality there can be an organization formed. There is no man in this house who will deny that, and in many localities there have been organizations formed. I have a paper in my pocket here from up in the Sacramento valley; so in Santa Ana valley and Santa Barbara and San Gabriel valley, and there are others. Now, they represent the States, and all these can be thrown into a central corporation, and let that corporation be represented in a Congress with representatives upon the basis of the strength of this individual corporation, and that forms the central power. That central power would have little to do, for each individual corporation makes its own by-laws and manages its own local affairs. It does not look to San Francisco for anything of that kind. We from Southern California do not want to send to San Francisco for a man to tell us how to pack our oranges. We cannot do it, and a man from San Francisco will not have time to come down here and superintend the packing of our fruits in Southern California, neither will he have time to go to the extreme North. These things must be done by the local legislature, and it is the local legislature that must create the central power, and in that way it will get strength as a central organization. They will negotiate with the railroad for shipping facilities, they will have the management and appointment for the attainment of this central idea, for which we are all working—the distribution and sale of fruit. In that way, and in that way alone can this organization be formed. In the South we cannot make a better showing, than this is from the North where they are not able to show five per cent of the fruit-growers have subscribed to the capital stock of the central organization, but give us two weeks' time in the individual corporation, and we can come here with 95 per cent of the fruit-growers of Southern California.

Mr. Rose: I was up at San Francisco but did not propose to go into the Fruit Union of any kind, State or local. I was courteously treated and asked a good many questions, and discussed matters then with them. And when it came to the matter of taking stock, there were present as many or more than here now, and all those gentlemen took stock and they were representive men of the State too. They have not had time as yet to ask their constituents to join them since that time. I believe it to be desirable to have the State organization where the same men can do the whole business and could do more if there was more to be done.

Mr. Hatch: At this last meeting in San Francisco, there was an earnest interested

assembly of those who own fruit in California, who were desirous of forming an organization, and when we found that that would be done, we decided upon one organization, by means of which the fruits of California could be distributed throughout the markets of the East, and competition might be avoided; and that with two organizations this could not be done. To my mind, competition was the main point to avoid. That was the conclusion to which we were forced by the result last season by a reduction of $200 a car. I was laughed at for saying we would send too much fruit into certain localities in the Eastern markets. Now that competition must be avoided, and the fruit be placed in the hands of one distributing house, or agency, call it what you may, to dispose of so that no place would have too much, and that each place should have all it required. With two organizations, call it a fruit-growers' union, a co-operative union or anything else, they will come into antagonism, because there is no locality in California but which, to some extent, produces the same fruits that another locality does. In your section here, the deciduous fruits will form no small part of your production in a very short time, and oranges from the north will compete with you more than you believe, for there are many localities there where fine oranges are raised, and they may yet successfully compete with you. You may put transportation down very low, but to avoid competition is the main thing. I claim that if our fruits were put in the East at the rate of one dollar a ton, or if transportation would be such as to pay us five dollars a ton for the privilege of transporting it, that unless it was profusely distributed, we would have no greater success than we had this year, because there would be too much in one place and we would get nothing for it, as was the case in some instances this year.

Thursday's Session.

The chair announced the following committee of representatives of Southern California to consider the matter of the California Fruit Union:

Dr. O. H. Congar of Pasadena; Abott Kinney, San Gabriel; James Bettner, Riverside; C. E. White, Pomona; T. A. Garey, Los Angeles.

The chairman announce the topic for the morning: "The best varieties of the different kinds of fruits to meet the wants of consumers in the different seasons."

THE LEMON.

Mr. A. P. Chapman, of San Gabriel, read the following paper on the lemon:

In considering this subject we must begin with the defects of the cultivator who has forced it to become known at home and abroad as large and pithy, of thick skin and bitter rind.

Any lemon allowed to thoroughly ripen on the tree is apt to, and generally does, develop the aforesaid characteristics, and produces in the cultivator a large hole in the pocket, pithy brain and thick skull full of bitter thoughts. We will divide our subject into heads: The care and cultivation of the tree and the gathering and packing of the fruit for market.

The lemon being very susceptible to frost we choose a naturally dry and moist soil, but where we can at will irrigate it; for the most important thing in plant life is water; without it plant food is unavailable. Yet we will not irrigate too much for fear we may wash away part of our plant food and make our soil too cold and clammy.

We must also use manure, for of what benefit is it to groom a horse and not feed him. And we will feed him right well some 25 tons of barnyard manure to the acre, and on that in the fall of the year four barrels of lime that to render our manure available.

We can plow our trees in the month of November, and turn under our summer weeds and other manure. We will plow in the spring of the year, and turn under our winter weeds, remembering all the time that they are our best friends, for they will make our sandy soil rich and dark; they make our adobe soil light and yellow; they make both soils more susceptible to hydroscopic moisture, and retain it. Chemically, they supply the soil from the air with carbon, and from the ground have made latent plant food potent.

The trees should also be sprayed twice a year, in June and September with two pounds of potash to 100 gallons of water, which solution should leave the caldron boiling hot. This not only kills all insect life, but keeps your fruit perfectly clean. Any man who has to wash his fruit has made a failure in raising it.

The fruit should be gathered green of such size that allowing for shrinkage, will pack from 250 to 350 to the box. A man gathering has his sack suspended from across his shoulders, plucks the lemon from the tree with his hands. If he drops one he is not allowed to pick it up, for that lemon is apt to rot.

He carefully places them in his sack and, having filled the same, he places them one by one in a tray; the trays are to be placed one above another in the shade of a tree. They should be six inches deep filled four inches deep with lemons.

There they are allowed to remain for one week, the weather permitting, before they will bear the jar of transporting them to the packing house. At the packing house the trays are to be placed one above the other about six trays high. A layer of old newspapers is placed on the topmost trays to keep the lemons therein from drying too fast and getting dusty. At the end of another week, if the weather has not been damp, they will be ready for packing: being yielding and leathery to the touch, they will also have commenced to turn yellow. Assort them into sizes and pack those of the same size in a box by themselves.

ORANGE GROWING.

The following essay was read by Thomas A. Garey, of Los Angeles:

In the year 1880, in my work on "Orange Culture in California," I wrote as follows: "That the culture of the citrus family of fruits is destined to become one of the leading industries of the great State of California is no longer disputed by the intelligent, reflective, mind. That it is now, and will continue to be one of the principal incentives to immigration into this State, is an acknowledged fact, which is amply proven by the testimony of all that have taken the trouble to inform themselves on the subject." I see no reason to change my views on this subject at the present time, but am more than ever convinced that as time elapses, and more knowledge is gained by prac-

tical experience, the industry will be found to be more remunerative in the future than it has been in the past. I will here remark that in this paper I prepare to quote largely from my work on "Orange Culture in California," written in 1880, and published by Dewey & Co., of San Francisco in 1882, changing and altering the subject matter where necessary, to conform to knowledge acquired in the interim. The combined efforts of leading and progressive horticulturists will awake men who are now engaged in the great movement to organize protective business associations, to facilitate, provide for and control the markets for our citrus fruits in the commercial centers of our country, will, in the near future, in my opinion, bring increased and highly remunerative returns for the product.

I am as firm in the belief to-day as I was five years ago that orange-growing in California is yet in its infancy. That orange growing, the combination for active, practical work by actual growers and producers will increase and the result of their labors will stimulate the planting of large areas to orange and lemon trees; hence, the practical suggestions contained in this essay may be of value to those planting new orchards. It may be a warning and may enable new beginners in the business to avoid the quicksands and sunken rocks so abundant in the paths of the orange-grower; may enable him to ford the stream at a safe place. The information herein contained has cost the writer many years of time. If it proves of value to those engaged, or who may engage in the business of orange-growing, I will be well repaid for my work. Passing over the matter of selection of seed, method of planting and raising the plants, selection of a proper site for an orange nursery, transplanting to nursery rows, etc., I will first speak of the

Selection of a Proper Site

For the location of an orange orchard. The site of an orchard is the first and most important consideration. I believe, all things considered, the table or mesa lands near the mountains are the best orange lands. (There seems to be some exception to this rule.) The flavor of the fruit in the valleys or near the sea is good, but the prevailing fogs and the exudations from the black scale united, soon cover the limbs, leaves and fruit with a thick coat of black fungus mold, rendering it unfit for market and substantially unmerchantable.

Trees that are grown in nursery or low lands that are covered with this mold, when transplanted to more favorable localities, soon become clean and bright, proving conclusively that location has much to do with clean or smutty trees, and consequently clean, bright, merchantable or smutty, black, comparatively unmerchantable fruit.

Irrigation.

As the years roll by I am more than ever fully convinced it is the greatest folly to undertake to grow oranges successfully without irrigation. If the location is first-class and the soil deep and rich, and the cultivation is thorough and complete, the trees will grow and thrive until fruit appears without irrigation. If non-irrigation is persisted in after fruiting shall have fully commenced, the fruit will be dwarfed and unsavory. At all events, an ample store of water for use in emergencies is a safe and wise provision; it is my candid opinion the full measure of success can never be attained without it. If you succeed by thorough tillage without water you will deserve to be envied, but ample irrigating facilities will be safe precautions and will operate as an insurance policy against drought.

The method of applying water to orange trees is somewhat varied. In 1880 and 1881-82, I was intensely interested in the system of underground irrigation and believed it would be a great labor saving, water saving and successful method, especially in districts where water was scarce. It has not, however, met my expectations, and the more primitive methods still almost universally prevail. Though I believe irrigation absolutely necessary, I know it is a great damage in many instances where an excess of water is put upon the ground. I know of but one disease the citrus family are subject to in this county; it is what is known as the gum disease. Excessive irrigation and slovenly cultivation are admitted to be the source of this disease. Orchards properly irrigated and cultivated are not affected with gum disease, hence you who are blessed with an abundance of water, be careful and use it judiciously and intelligently. Orchards on high well-underdrained land, that receive irrigation only when absolutely necessary and that are carefully cultivated after each irrigation, and before the ground shall have time to bake and crack are always found free from this disease. The term "gum disease" is after all undoubtedly a misnomer; strictly speaking it is not a disease, it is simply the result of improper treatment of the trees. To cure this so called disease, remove the tree and plant a sound tree in its place.

Soil.

The quality of the soil for an orange orchard should be a deep, rich, sandy or gravelly loam with an admixture of clay, and a gravelly subsoil free from hardpan—at all events, the hardpan should not be less than six feet from the surface, but a soil with no hardpan is preferable. Where hardpan is near the surface the trees do well for a few years, but when the roots reach this hard, impervious sub-stratum the tree at once begins to fail, the leaves turn yellow, the ends of the branches begin to die back, the orchard is ruined.

Selection and Purchase of Trees.

The selection and purchase of trees for an orange orchard, is a prime factor in the future success of the venture. The fully established and generally well known reputation and reliability of a nursery, are landmarks in the journey for the selection of trees that should not be overlooked.

The thrifty condition of the trees is the first item in which caution must be exercised. If the trees are healthy, they will be vigorous, and the foliage will be of a dark green color. A tree suffering from bad treatment, always declares the fact by its general appearance. Trees for an orchard should be two to three years from the bud or graft (one year is preferable to five or six) with clean smooth stem and evenly balanced head. Old dwarfed culls and scrubby trees are dear at any price. Vigorous symetrical trees of proper age should be selected at any cost; it will pay to pay good prices for

good trees. Nurserymen who consider the wants of their customers, cannot compete with careless, irresponsible importers in the business. Mr. Wiley of Pomona, says there is not a reliable nurseryman in the State of California, but I think he is mistaken.

Plan of an Orchard.

Our orange orchard is planted not only for ourselves, but for our posterity for many generations, hence it behooves us to use judgment in planning and laying out so great and worthy an enterprise. He who successfuly plants an orchard of citrus trees leaves a grand heritage to his heirs; he is a benefactor to his race. Do not plant too close; give your trees plenty of room. My experience leads me to recommend planting budded or grafted orange trees twenty-four feet apart each way; seedlings thirty by thirty feet apart; lemons, budded varieties, twenty by twenty feet apart; limes the same. I consider these distances ample for the full development of the trees. Plant the trees in straight lines. It pays well to take time to stake an orchard so the rows will be straight. If crooked and irregular, with here and there a tree out of line, it will be extremely disagreeable to the artistic eye, besides being more difficult to cultivate.

Transplanting to Orchard.

Transplanting to orchard is generally considered simple and easy, and with few exceptions it is done in too much of a hurry. The question is not as it should be, How shall I proceed to plant my trees in the best manner to insure a quick and permanent growth, but, How can I plant my trees in the least possible time, and with the least expense. He who follows out this idea has at least ample time in which to repent at his leisure, for his haste in throwing his trees in a slovenly careless manner into the soil. It is important to know what month is best in which to transplant the trees, as to understand any other point in the business. I have planted to nursery rows and to orchards many hundreds of thousands of orange trees, having planted in every month of the year. I think I have perhaps had more practical experience in this matter than any other person in this State at least. If extreme care and caution be used, even to the minutiæ, they can be transplanted at any time with some degree of success. I should have remarked that the orange tree is one of the hardiest trees known: they will survive very harsh and unhorticultural-like treatment, they will withstand drought and excess of water, they will live and make a stunted growth with slovenly cultivation, when what are called our hardy trees, under like treatment, would die. At the same time the whole order of the genus citrus responds most gratefully to proper treatment. I have found that May is the best month in which to transplant; there is no danger of frost, the windy season is past, the ground is warm and the weather is mild, being neither too hot nor too cold. There is usually more cloudy weather in this month in Southern California than in any other, not excepting even the rainy season. February is my next choice. When trees are to be moved long distances, for instance from the nurseries of Southern California to the Northern counties of the State, I prefer the month of February, all things considered, in which to move them. Occasional hot spells occur in May in the Northern counties, and for this reason, and this alone, February is preferable. June is better than March, and July is better than December or January. I have had less success in the fall than at any other time. I would rather plant in August than in Octobor or November.

The holes for the trees should be dug from two and a half to three feet in diameter and the same in depth. Throw the surface soil to one side and the subsoil to the other, that the surface soil may be put in the bottom of the hole, where the trees shall be planted, and the subsoil above. Two methods of digging the trees are generally practiced. First, to bag the roots and second, to puddle the roots or cover with grout after digging. The former method is the safest, but the latter, when well and properly done is the better. Great care must be taken in handling orange trees; when planting, the roots must not be exposed to the sun or wind; the roots must not at any time from digging to planting be allowed to get dry. The orange tree being an evergreen, the fibrous or feeding roots dry up surprisingly quick, and when once dry, nothing can resuscitate them to their normal condition. When planting bagged trees do not remove the bagging, but plant it with the tree; it soon rots and does no harm. I recommend cutting the limbs back severely at this time, more than at any time before or after. The condition of soil at the time of removing the trees from nursery rows is very important. It should be in good order, thoroughly damp, in a good condition suited to the rapid growth of the tree. An orange tree seldom lives if removed from the nursery when the ground is very dry. Probably more trees are lost from this cause than from any other, though it may not be generally known. In concluding this part of this subject, a few words in reference to the tap root may be of interest. It is my opinion a tap root cut from 12 to 16 inches below the surface of the ground, is as good as if cut at three feet or removed entire.

I know that when the tap root is cut at the former depth, from two to five tap roots generally form instead of the one original root, and strike out at different angles, thereby acting as substantial braces to the trees and penetrating the earth to a great depth. But save all the lateral and fibrous roots as nearly intact as possible, and the loss of most of the tap root will do no injury.

Cultivation.

It is of great importance to give close attention to the matter of cultivation; the soil must be kept mellow and clean at all times. The method of cultivation should be such as to leave the surface of the soil as level as possible, except in the fall at the approach of the rainy season, when the ground should be plowed with a turning plow, turning the soil to the trees; leaving the trees on a slight elevation, and causing the winter rains to be drawn from the trees to the dead furrow in the center of the spaces. The ground is comparatively cold in winter, and it is detrimental to the growth and health of the tree to allow water to stand near the trees to injure the roots.

The orange tree will not flourish in this climate when the roots stand in soil filled with water. Some implement that will pulverize the

soil thoroughly and destroy the weeds should be used. Cultivate close to, and around the trunks of the trees, as well as between the rows. Commence early in the spring and keep the cultivator running all summer; in the fall, as already stated, finish with a turning plow, being careful to turn a shallow furrow near the trunks of the trees, increasing the depth as you approach the center of the spaces. Deep plowing destroys the fibrous fruit-producing roots of orange trees, to the great injury of the tree and the crop. In the spring use a turning plow again, turning the soil from the tree, leaving the soil level. There is a difference of opinion among horticulturists as to the depth to which an orange orchard should be plowed; some favor shallow plowing, some deep plowing. I approve of, and advise, shallow plowing, not to exceed two or three inches in depth, near and adjoining the trunk of the tree, and within a radius of four feet from it, increasing the depth gradually from this point to the center of the spaces, the greatest depth not to exceed six inches. The general cultivation of the season should not exceed four inches.

Crops in Orchard.

Do not under any circumstances, plant any kind of crops in your orange orchard. If you propose to plant ten acres in orchard, and cannot make a living until the orchard commences to return an income, then plant five acres to orchard, and plant annual crops on the other five acres. This is sufficient on this point: look around among your neighbors orchards and note the condition of the orchards used annually for various crops, and contrast their appearance and condition with the orchards used and devoted entirely to the trees, and you will be convinced that planting any kind of a crop either cereal or vegetable, is a great injury to the orchard.

Fertilizing.

The arable land of California is generally exceedingly rich and fertile. Two crops of ordinary products are often taken off annually for a long series of years, without fertilizing and without any apparent dimunition of yield. Perhaps no country in the world responds more promptly and faithfully to the demands of the husbandman without fertilizing than the arable lands of California. Large orchards are producing abundantly without having received any artificial fertilizers. However, I believe a generous coat of well composted manure annually, will be a paying investment. Manure should never be mixed with soil when filling up the excavation at the time of setting the tree. I have tried this method to my regret; it increases the heat to an unnatural degree, which requires an unusual quantity of water to modify, and damages the tree very much; spreading the manure evenly on the surface of the ground around the tree, to a distance equal to the diameter of the top, is the proper method of applying it. The manure should be at once mixed with the soil by cultivation. The best time to apply the manure is in the fall, at the commencement of the rainy season; then the rains and subsequent irrigations carry the liquid manure down to and among the roots of the trees, where it is appropriated for the growth of the trees.

Pruning an Orchard.

Now we have arrived at one of the most important branches of the subject of orange-growing. At the last quarterly session of the Los Angeles County Pomological Society, held at the town of Pomona, it was warmly argued by the president of the Pomona local pomological society that pruning deciduous fruit trees was entirely unnecessary, and a great horticultural mistake. The same argument used in regard to deciduous trees is applicable to citrus fruit culture, on general principles. I think the non-pruning theory, if adopted and practiced, would soon ruin all our orchards and the reputation of our fruit, both temperate climate and semi-tropic. There is, however, much diversity of opinion prevailing in this very important branch of the science of horticulture, not as to the fact as put by some that pruning is a necessary evil and unavoidable, but in regard to the particular method to be used. Various methods are pursued, from that of allowing the trees to branch at the ground and letting them severely alone (which might very consistently be called the Willey system), to that of pruning them up and commencing to form the top or crown at an unusual and undesirable hight. The extremes of very little if any pruning, to a continuous cutting and hacking, prevails to a great degree. Perhaps so wide a difference of opinion does not exist among our fruit-growers on any other branch of fruit culture. November, December or January is the proper season for general pruning. Orange trees grow less during these months than at any other time. January is immediately prior to the season of blooming. The annual pruning should be done before the fruit forms. At all seasons of the year all superfluous sprouts on the trunk and stray branches that threaten to throw the tree out of balance should be removed without delay. A sharp knife should be used, and all cuts made as smooth as possible. All cuts made with a saw should be pared down smooth with a sharp knife. When large limbs are removed, the cut portion ought to be painted with gum shellac in proper solution to spread easily.

There are involved in pruning several principles, among which are the following: First, the removal of the branches from the trunk of the tree to admit of cultivation close to the tree with a horse and cultivator. Second, the removal of all limbs that cross or rub each other or that grow too close together diverging from one point. Third, thinning out the center of the top of the tree, cutting out all new producing branches to admit an ample supply of air and light. On the first proposition a wide difference of opinion prevails. The advocates of low pruning argue in favor of this method, because it shades the trunk of the tree from the direct rays of the sun, and that it shades the ground preventing evaporation and hence less irrigation. The advocates of high pruning are no less enthusiastic in defense of their theory. They argue it admits of better and more thorough cultivation close to the trunk of the tree as well as in the spaces between the trees, and at less expense. They say the entire surface of the soil should be stirred with the cultivator, not only to destroy weeds, but to pulverize the soil for the retention of moisture, and that the direct rays of the sun should fall on the whole area of the ground in the orchard. I

think the soil requires the warmth of the sun, as well as cultivation, that the trees may receive the full benefit of the moisture in the ground and that the fruit may be fully developed; nearly all kinds of plants, deprived of the unobscured light of the sun, make a pale, sickly and unnatural growth. Plenty of sunshine with an ample supply of moisture, proper and scientific pruning, and thorough cultivation, are the prime requisites, to promote a quick, healthy and vigorous growth, and to cause us to realize the full fruition of our hopes in the size, quality and general excellence of the product. I believe in high pruning, and recommend it.

Before the trees are transplanted to orchard, and while growing in the nursery, they should be allowed plenty of limbs, which make them develop a stocky trunk. Trees trained to long, slim, branchless switches in nursery usually have poor straggling roots. After planting to orchard, raise them gradually by removing a few of the lower limbs annually until the requisite hight is attained.

I do not pretend to dictate or lay down an infallible rule as to the best of the different methods of pruning, but simply give my preferences from a practical standpoint, and their advantages as I see them, leaving the intelligent pomologist to decide for himself.

Destructive Insects and Remedies.

Now, after all the information and instructions in the preceding part of this paper is fully digested and assimilated, and the pomologist begins to feel he has a sure foundation upon which to build a business, from which he fondly hopes to derive an income to compensate him for time, money and labor invested, he is suddenly confronted by an enemy not laid down in the program. I refer to injurious scale. That you may know the present highly magnified and overdrawn scale bug scare is at present not new to me, at least, I will repeat what I wrote in my book on "Orange Culture," heretofore referred to in 1880, and published in 1882. I then said, "A variety of scale bug that is new to us has made its appearance within a few years in some of our orchards, and known as the 'red scale bug.' The appearance of this insect is the advent of a real enemy to successful orange-growing. As soon as it is known it has obtained a foothold in an orchard, no time should be lost in destroying it thoroughly and effectually. No half way measures will do, heroic and untiring energy must be used to destroy it and prevent its spreading over your own and adjacent orchards. The white scale, a formidable enemy to the orange tree, is somewhat prevalent at present. It appears already to have made considerable progress in our country. A year or two ago it was known only in two or three orchards, but it is now found in several places miles apart. Colonies and neighborhoods cannot be too cautious in using every possible means to prevent its introduction. I do not consider its presence fatal to the business, but it is an expensive and damaging evil that must be eradicated from our country." These warnings are as proper to-day as when written. I also said at that time, "I have sometimes thought it would be commendable and proper if the directors of our horticultural societies would bring this subject to the attention of our Legislators. There might, and ought to be, some legislation providing for the compulsory eradication of this parasite from the orchards of California."

There will always be some easy-going owners of orchards who will be slow and slovenly in their treatment of this scourge; this will, at least, have a tendency to retain it among us for a considerable time. I closed my chapter on this subject with these words: "Watch your trees closely and diligently and remove every appearance of evil from your orchards—which evil is the advent of the red and the white scale-bugs." I refer the further consideration of this subject to Dr. S. F. Chapin, Chief State Insect Inspector, and to our worthy County Scale Bug Commissioners, Messrs. Dobbins, Rice and McKinley; and I ask them if I did not write in a prophetic manner in 1880, and cast a horoscope that is now being realized and understood in our State. In regard to remedies for the extermination of the red and white scale, I leave the matter with the honorable gentlemen mentioned above. In conclusion I will speak of the

Best Varieties to Plant.

Five years ago I said I would plant, if planting 1100 trees, in the following proportions: Four hundred Mediterranean Sweet; 400 Washington Navel; 150 Malta Blood, and 150 thin-skinned St. Michael. I have no reason to alter or change the above proportions to any great degree at present. I would not plant seedlings trees under any circumstances whatever. I would plant budded lemons only of the best, well-tried varieties.

THE FIG.

The following essay was prepared by Dr. Gustav Eisen, of Fresno, Cal.:

The growing and curing of Smyrna figs, or rather of so called Smyrna figs has now for years been a desideratum for California, but so far very little has been done, and very few efforts made which have resulted successfully. If this want of success has been the result of poor varieties or of insufficient knowledge of the proper conditions of a successful culture, I leave to you to decide. We may not be far out of the way if we suspect both.

The importance of successful fig culture can hardly be overestimated for our State. In the Mediterranean countries, where the climate is very similar to our own, the fig crop is of the very greatest economical importance. Indeed in Asia Minor and Arabia, the failure of this crop is dreaded even more than the failure of the cereals, as not only is the country at such times deprived of its chief article of export, but the failure of the fig crop means starvation for both man and beast. Such failures are, however, exceedingly rare. The figs generally known as "Smyrna figs" do not all come from Smyrna, in Asia Minor. But this port is the one from which the largest portion of the fine figs are exported. While these figs are grown everywhere in Asia Minor, the very choicest are restricted to certain districts within easy reach of the port of Smyrna. It is difficult to believe that there should be so few localities adapted to the production of the better brands of figs, and it is far more rational to think that through the ignorance and habits of the people the secrets of the successful culture of the finest figs have

been confined to certain localities, and that no efforts have been made to distribute the proper knowledge to other districts. No doubt jealously has been a powerful agency in confining the knowledge of the culture and curing of the finest figs to certan districts. To illustrate this, I will relate an incident that happened to me in Central America. The chief industry in that part of the country of which I now speak, is the making of hats from the fibers of a palm leaf. In one place there are two villages situated within three miles of each other, and the inhabitants of both do nothing else than manufacture hats. The palm leaves are not grown in the vicinity in sufficient quantity, though there is no reason why they could not be grown there. A few thrifty trees bear witness of this. The people of both villages go to Salama, 100 miles away, to get the leaves. The idea never struck them that the leaves could be grown at their very doors. Now in one village, Monjon, they manufacture very superior hats, which in the market bring 50 to 60 cents each. Upon arriving at the next village, Tepic, I found the men having just returned from a trip to the capital, and that they had been obliged to dispose of their hats at six cents apiece. Struck by the enormous discrepancy in price, I asked the natives why their neighbors got so much more for their hats, when I was told that the Monjon hats were very much better and that the Tepic people did not know how to make as good hats. In my simplicity I asked the men: "You say you have the same leaves; now why don't you learn to make as good hats?" The answer was: "Sir, we do not know how, and they do not want to tell us."

The people in these semi-civilized countries have evidently no conception of the way knowledge is distributed and exchanged in countries like our own, where, with the aid of the press and conventions, we have accomplished in a few years what has taken centuries to achieve for them.

Whence Come the Imported Figs.

But to return to Smyrna. The very best figs from there come to us from the valleys of the rivers Meander and Cayster, and from the localities known as Aidin, Nasli, Erbeyli, Sultanhissar, Demirdjik, Ademish and Locoum. But outside of these places in the immediate vicinity of the export harbor—a location which undoubtedly is highly favorable in a country, where, until lately, the crop had to be carried to the port on the backs of camels in sacks of hair—some other localities in Asia export figs of considerable merit. Such places are Aleppo, Mytilene, Tyre, Damascus, etc.

In Egypt no figs seem to be produced for export, and naturally so from the condition and character of its soil, the latter being principally bottom land, which is always more or less unsuitable to the production of a perfect fig. In Greece, especially in the Grecian archipelago, we meet with fine plantations of figs, with partly the same, partly different varieties from those grown in Asia Minor: such plantations as those of Zante and Chios and Kalamata, but the figs from here are not equal in quality to those from Smyrna; still their export from the three places amounts to 10,000 tons a year. The coast of the Adriatic produces some very choice figs, the finest coming from Catanea and from Sicily; but, in fact, the whole of Italy is largely dependent upon its fig crop, and few, if any, localities are found there in which the fig tree is not grown. In Tuscany many figs are raised and the variety here called Dottati is considered superior for drying, though we believe they are principally destined for home consumption, and not for export. The south coast of the Mediterranean produces also the very choicest figs. In Algiers the fig culture is not inconsiderable, and in Morocco some of the very finest varieties are grown: according to some reports, even superior to, or at least equal to, those of Smyrna. But we have no statistics of any being exported from there. The varieties grown there are of many colors: black, white, yellow and green, the latter being considered the finest and the most profitable.

In Spain and Portugal we find fig culture one of the prominent industries. In Sevilla and Malaga many figs are grown and many are exported. Malaga especially excels in fresh table figs and it is from this port that we get the delicious St. Pedro and the Breba figs.

The southern part of Portugal, especially the province of Algarve, was once the chief supplier of the dried figs consumed by Northern Europe. The port of Pharo was once as famous for its export of figs as is now Smyrna, but the fig trade from these ports has of late years declined considerably. The export port of Portugal is to-day chiefly *Villa Nova de Portimao*, though, according to Dr. Bleasdale, even from Lisbon no inconsiderable quantities are exported. The province of Algarve is, as far as I can judge from descriptions and from my principal informant, Dr. Bleasdale, very similar to Los Angeles county. The low plains here and there traversed by low hills, slope up towards the higher mountains inland, presenting sandy slopes, cooled by the sea breezes, but untouched by the fog of the immediate coast. The southern part of France is also adapted to fig culture, but the varieties grown here are mostly different from those of the more southern States, I have just mentioned, and originated in, and more adapted to the country and climate in which they are grown. The number of varieties originated in France is simply astonishing; they can be counted by the 100 or more. As far north as Paris fig culture is practiced in the open ground, but, of course, under the greatest difficulties, caused by the inclemency of the weather and the shortness of the summer. But, notwithstanding this, says Du Breuil, the eminent French authority, we have through the origination of new varieties succeeded in producing figs not inferior to those of the southern and more favored countries. This, of course, only refers to table figs: not to those used for drying. In the south of France, especially around Marseilles, the drying and curing of figs has reached considerable importance, but the figs produced are in size and flavor decidedly inferior to the Aidin figs.

Even north of Paris fig trees are occasionally grown, but naturally more as a curiosity than for any commercial value. Even in south of England figs are grown on trellis and on walls in favorable localities.

In leaving the eastern part of the world and turning to our own, we find that figs are grown in many of the southern States, or rather everywhere where the nature of the climate allows. The experience there has been of very

much the same nature as our own in California. The fig tree grows well enough, but the varieties have been poor, in many instances worthless. In Mexico and Central America many figs are grown, both black and white of good quality, and especially in Lower California are some plantations noted for their excellence. From a gentleman who has been living in La Paz, I learn that excellent white figs are grown there, called Brebas, and that they, what seemed to me incredible, are the second crop of a variety the first crop of which is blue or black. These figs are said to be very delicious and highly valued. In the Central American highlands is grown a probably native variety of small, black fig, which, indeed, is very fine as fresh or candied table figs, but for drying of no value, or rather, of no value as an export article in competition with white figs. In those countries I have also seen enormously large, wild fig trees, some 15 to 20 feet in diameter at the root, and bearing very large, luscious white figs, covered with drops of juice, like white pearls, and looking exceedingly inviting and appetizing, but upon tasting them I found that no more bitter and nauseous fruit was ever tasted by man.

In California we have, as far as I knew, no native fig, the Mission or California being, if not originated from seed here, probably identical with some of the many black varieties in Spain.

Soil and Climate.

The statistics of soil, climate and other conditions necessary for a successful fig culture are so very meager and so very scattered, that the task of bringing them together is not a very thankful one, and the material thus collected is by no means sufficient in any way to satisfy us.

In considering these climatic conditions and soils, it is important to make a distinction between the cultivation of the fig for table use and for drying. The conditions for the proper culture of table figs to be eaten fresh are far less in number, and far less exacting than those for the production of a perfect and superior dried fig, destined to rival the imported article. I believe there is hardly any place in the southern States of this continent, which would not produce a fair or good table fig, provided the right variety suited to the locality is selected; but in regard to drying figs we have to look closer to conditions of climate and soil.

What strikes us then at the offset is the great similarity of the whole interior of California with the most favored localities of the vicinity of Smyrna. The seasons are there divided into two, just as here; one dry and one wet. The winter rain commences in November and lasts until May. From May until October are the dry months, and with few exceptions no rains fall during the summer months, thus promoting the ripening of the fig and the drying of the same. Occasionally, however, heavy rains injure the ripening figs, cause them to crack and sour, and toughen the skin, and causing the otherwise white color to turn a more or less dark brown. Such seasons are by no means unknown in even the best districts in Asia Minor, and are the causes of the bad years. Thus we see that the summer rains, which here in California are so very unwelcome to almost all of our crops, are similarly injurious in the fig districts of Asia Minor. In the most favored spots of the Smyrna districts the summer heat seldom exceeds 90° and 100° Fahr. in the shade and 130° to 140° Fahr. in the sun, and the freezing in winter is seldom more than half a dozen degrees. A heavier frost, however, is not considered injurious, or in any way influencing the quality of the fig crop.

The soil in Smyrna and vicinity is very variable. It contains a fair percentage of lime and potash, but is otherwise of various qualities. The most luxuriant growth is obtained in a deep rich soil, but the best figs are grown on a soil which is made loose and porous by a fair admixture of sand. A sandy loam is thus the best, probably because the drainage is here the most perfect. Such soils produce large figs, of a white, thin skin, of high flavor and great sweetness.

In aspect the Meander valley resembles our lowest foothills—small valleys, separated by low ridges, during the dry season, as uninviting as the foothills of the Sierra Nevada or the Sierra Madre. Some of the fig orchards are planted on hill land and some in the valleys, neither locality having any decided advantage over the other. The valleys and the plains generally give thinnest skinned fruit, the skins of the mountain figs being considered thicker. But in rainy or foggy weather the mountains or hills dry up the fastest: in this respect showing a decided advantage over the low, perhaps swampy plains.

In California we will probably find many localities likely to produce the finest figs. Our experience is that the principal necessity is a well-drained soil. The nature of the soil is less important, provided that it is sufficiently sandy to be loose and porous. Almost any soil that we have can therefore be used for figs destined for drying, except one, and that is the heavy black adobe so common in many of our lower valleys. I cannot sufficiently caution against the planting of fig orchards in such soil; it is the one of all which is by nature not destined for the fig. As to which *is* the best soil for the fig, only experience can tell. A sandy, reddish or light soil is the one preferred in Smyrna; a white clayey soil is the best for the fig tree at Sidon. In Morocco and Tangier, where the choicest varieties are grown, a light loam is considered superior; indeed, there the poorest soil is preferred, but instead manure is used to increase the size of the fruit, as well as the yield.

If we then recapitulate, we find that the following conditions are advantageous to fig culture:

1. Abundance of moisture in the soil before the figs begin to ripen.
2. Good and perfect drainage at any time.
3. The gradual drying of the soil when the fruit is ripening.
4. Sufficient heat to insure sweetness in the fig.
5. Absence of any frost lower than 18° Fahr., though the figs can stand a temperature as low as 12° Fahr., if they are tolerably dormant.
6. Absence of heavy rains during the maturing of the fruit.

Again the following conditions are injurious to fig trees, if the object is to procure superior fruit:

1. A wet soil, with stagnant water during the fruiting season.
2. Cesspools, sewers and ditches in so close proximity to the trees that they can send roots to them.

3. Heavy rains on the fruit, when it is ripening. Some of the finest varieties are then apt to crack and sour.

4. Heavy rains and dews upon the fruit exposed for drying.

5. And last, a heavy undrainable black adobe soil, impervious to sun and air.

As to the favorable conditions I believe they are all within our reach in this State; indeed, few are the localities which can not command them.

Planting and Cultivation.

The horticulturists of California can, I believe, have but little to learn from the mode of planting and cultivating in countries so backward in these respects, as South of Europe and Asia Minor. But the very fact that in this very home of the finest figs certain operations are adopted which to us may seem highly ludicrous, or even injurious, should set us to think that we do not know it all, and at least set us to inquire as to the reasons for these peculiar practices.

First, then, in the Aidin district the fig trees are always set two in the same hole. What would we think if we saw peaches and apples planted two and two, immediately joining? After the ground has been sufficiently plowed and dug, holes are made in varying distances of 25 to 30 feet, according to quality of soil, the poorer soil requiring the lesser distance. In these holes the fig trees are plowed in the month of March one foot apart, and then joined at the top, and here made to cross each other like the letter X, a few inches above the ground. At the junction of the trees they are tied to each other and to a stake, so as to keep steady. From Dr. Stillman, who has visited Smyrna, I learned that both trees are allowed to grow and develop into a tree, and the stems are wound one around the other, like a trailing vine round a pole. The object of this peculiar custom is difficult to explain, as we know of nothing analogous in our horticulture. I have, however, thought the object sought is as much as possible to prevent self-fertilization, and to increase hybridization by the pollen of another tree. It may also be that the cuttings so planted are taken from the parent trees at different times of the year. This would have a tendency to produce the different crops of figs at the same time. As the first crop has more male flowers than the latter crops, it would, for the proper fertilization of the figs, be a great advantage to have them both appear in close proximity at one and the same time. The first years the figs are irrigated by some means or other, and first, when fully established, are they considered able to reach the underground moister strata. The land is plowed several times a year and highly manured. The latter is the more necessary, as small crops, such as beans and corn, are grown between the trees for several years, or until the trees reach sufficient size to shade the ground. In some orchards, however, the trees are set much further apart, or 66 feet every way, and the intervening space is set in olive trees or peaches. In Catania, in Sicily, the figs are set 26 feet apart, without other trees between, and the soil is plowed or dug twice a year. Without this annual plowing the figs are said to become small and inferior. In Nice, in France, the figs are set 19½ feet or 6 meters apart.

The different varieties of figs attain their full bearing capacity at different ages. But in Smyrna a fig tree is considered to be in good bearing at five years after planting, or at least at that age they are considered to bear sufficiently to pay well, the yield then being 150 pounds to the tree. From that time on the tree is considered to increase in productiveness for 20 to 30 years.

In regard to California, the distance between the fig trees should vary with the variety. For heavy growing varieties, such as the Adriatic and the San Pedro, I would think 25 feet would suffice; at least, that is the distance I have adopted for my own trees.

In setting out fig trees it is necessary not to expose the roots to the drying winds or to sunshine. A few moments of each is sufficient to injure the roots in such way that they will require several months to recuperate.

The irrigation of the fig is a question of greatest importance. I have already shown that trees on wet or swampy soil produce inferior fruit, not fit for drying. In localities where irrigation is necessary, the supply of water must not be such that the soil is in any way made swampy, or supplied with so much water that it cannot be sufficiently drained in the fall. To give any general rule is quite impossible. There is hardly two localities in our State exactly similar in regard to the dryness of the soil, and accordingly each locality should be supplied with water differently, if at all. If we again, regardless of locality, should consider only the fig tree proper and its growth, I would say that the tree should have just moisture enough to be kept at a healthy growth, and as such I consider one that would produce branches of from one and a half to two and a half feet each season, and rather less than more. When long sappy roots are produced it is always an indication that there is too much water in the soil. Such wood will produce watery figs, deficient in flavor and sweetness, and flat and insipid to the taste. Such figs are neither fit for table nor for drying. It is especially during the drying season the supply of water should be limited, and I am satisfied that if the trees have had all the water necessary during the spring and early summer months, they will be much the better off, by having no artificial irrigation after the first of the month of August. But this refers only to older bearing trees. Lately planted trees may require water much later, in localities where irrigation is necessary. Such well matured wood is not likely to be injured by frost, even in our most severe winters.

Of no less importance to a successful fig culture is the mode of pruning. Unlike most fruit trees, fig trees should be but sparingly pruned. Any wholesale topping and heading back is decidedly injurious, and fig trees treated thus will produce inferior fruit the following season. I can not learn that any such heading back is practiced in Smyrna or elsewhere where fine figs are grown, and it certainly must be considered as highly favorable to the cultivator that such pruning is not necessary.

In Smyrna the trees are first raised to the hight of five or six feet, then cut square off and allowed to branch out. For California I advocate to branch the fig trees very low. My plan is to sucker and pull off the sprouts the first year, but afterwards allow the tree to branch freely low down from the main

stem above ground, only keeping the real root-suckers away. In this way a goblet-shaped tree is produced with a solid main trunk not liable to split. The branches are sufficiently near the ground to allow the majority of the figs to be pulled by hand without the necessity to use a ladder, or without the inconvenience to climb the tree. In this way, also, the ground is kept cool and shaded, and not heated by the hot winds. The temperature of the fruit is thus kept more uniform, which, of course, is of the greatest importance. As regards after-pruning, it will only be necessary to from year to year cut out the dead wood and crossing and superfluous branches—to thin out, but not to cut back, except in an emergency. Such fig trees will be very different from those now generally seen. They will be trees grown for their fruit, but not for their shade.

Crops and Their Treatment.

All cultivated varieties of figs have three crops of figs, more or less distinct. The first of these crops are figs which were set already in the fall of the year previous, upon shoots formed in July and August. These figs are, except in a few varieties, of no value. They are larger, as a rule, than the later crop of figs, but not equal in flavor or sweetness. The French call these figs *fig fleures*, meaning fig flowers. Through some documents kindly placed in my hands by Mr. Nelmes, of Pasadena, and also from the highly interesting work on the fig by Count Solms-Laubach. I find that in Smyrna such first-crop figs are called *Boccore*. In Italy they are called *mamme* or *fiore di fico;* in Spanish, *Breba*. It would, however, be unjust to condemn all first-crop figs. The French grow for table use certain varieties of figs which produce good first-crop figs or *fig fleures*, which are there used for table only. On such varieties the later crops are generally of indifferent quality. This first crop is generally ripe in May and June. The second crop of figs is the principal one, and in drying fig the only one of any value. These figs are developed the same year as they ripen, and are found at the inner base of every leaf, while the first crop is found scattered on the branches and in places where there was a leaf the previous year. In Smyrna this crop only is used for drying figs, and is there called *Karmouse* and *Kermez*. In Italy this crop is called *profichi*. This crop begins to mature there in the end of July, but the majority ripens in the middle of August. The crop lasts generally six weeks. The third crop may be considered as the tail of the second crop, and if the weather is favorable it will keep on ripening until frost. The figs of this the last crop are, in Italy, called *mammoni*.

Here in Fresno I find the first Adriatic figs ripen in August, but the bulk of the crop will ripen in end of August and beginning of September, yet superior figs will keep on ripening until October is well advanced. When the figs are ripe, or sufficiently ripe to be dried and cured, they in some varieties drop to the ground, but in others again hang on to the tree and must be cut off. When this time arrives in Smyrna the figs are picked and put one by one, without touching each other, on matting, or even on the ground covered with cut grass or straw. The figs are on this exposed to the sun for 10 to 12 days or less, according to the weather. To begin with they are turned every day, so as to be equally exposed to sun and air, and if dew is expected they are covered over with matting during the night time. What is needed during the drying season is not an excessive heat, but steady sunshine and dry winds. It seems to me that here in California we could satisfy the most exacting Turkish demands in this respect. When the figs are sufficiently dry, the skin feels dry, but the inside should yet be perfectly soft and pliable. The ripe and sufficiently cured figs are now picked out, and the others left to remain until ready. It will thus be seen that the figs are not dried haphazard on roofs or the ground and then dumped into boxes and shipped. This I have known to be the general practice in California, and still we wonder why our figs are not any better. When the figs in Smyrna are dried sufficiently, they are by the fig-raisers assorted in three different sizes, then sacked in sacks made of camel's-hair—barley sacks would, on account of the fuzz, not do—and then sent into Smyrna. The merchant who has furnished the fig-raiser with his year's supply takes the crop out of his hands. The figs are now again assorted and are then ready to be packed.

In Portugal they have either a different variety of fig or the climate is more favorable, as the figs there dry sufficiently in five to six days. It may, however, be that some years are more favorable than others, and I am rather inclined to think this to be the cause of the shorter time assigned to the drying in Portugal. Last year I dried some Adriatic figs in five days sufficiently, but this year, which in every respect has been an unfavorable one, it needed 10 to 12 days to dry the same variety.

In Portugal the figs are dried on mats made of the esparto weed—*stipa tenacissima*—which is now growing in this State. When the figs are sufficiently dried they are stored in bulk for five to six weeks, probably to undergo a sweating process, or at least to have the moisture equalized.

In France, where fig culture is carried on only under great difficulties, some proceedings are adopted to hasten the ripening of the fig, which I here will mention more as a curiosity than for any necessity in imitating them. My own experience is that none of the varieties which I have seen so far need the manipulation practiced by the French, so as to accomplish what nature, unaided, does for us:

1. Shortly before the fruit is expected to set, the terminal buds of each branch are nipped off or suppressed; this prevents further terminal growth and throws the force of the sap into the lateral leaves or fruit-buds.

2. When the figs have begun setting, all the pushing, lateral leaf-buds are also suppressed except two at the base of each fruit branch. These two buds are allowed to grow to serve as fruit-bearing branches for another year. The leaves at the base of each bud are, however, not disturbed, as they serve to draw the sap and furnish the developing figs with sufficient nourishment.

3. Less than two weeks before the expected maturity of the fig, and when the eye of the fig begins to color, a drop of pure olive oil is deposited on the eye of the fig. This operation is always performed in the evening, shortly before sunset. The next day the fig, which was green and hard, shows softening and change of

color, and the maturity of the fig is henceforth advanced eight days. This process is used only for table figs, but is not considered profitable for figs destined to be dried.

In some districts again a goosequill dipped in oil is inserted in the eye of the fig. Again, in others, the eye is simply punctured with a needle dipped in oil. In speculating upon the possible effect of this dipping and oiling, it may be of interest to remember the effect the boring of the larvæ of the codlin moth has upon the apple and the pear, or the sting of insects generally upon fruit, it causes them to ripen prematurely, evidently through the greater influx of sap, in the effort of the fruit to heal the wound. The few notices we have of fig drying in France are scanty enough, our only authority being Du Breuil, and the few remarks upon this subject which I am able to make, are principally copied from him.

The figs are packed after all the dew is evaporated by the sun, placed on small trays made of reeds, and then exposed to the sun. Every evening these trays are either removed under shelter or covered over with cloths, etc., so to exclude dew or rain. Every morning and noon again the figs are turned in order to equally expose every side to the sun. The figs are sufficiently dried as soon as upon being flattened out toward the stalk they do not crack or break. If left later they will be too hard and spoil. In certain localities the figs are only picked when they begin to shrivel; they are then dried in the sun for two days and afterwards packed in sweat-boxes and let remain there for seven or eight days, and afterwards again dried in the sun. In rainy seasons the figs are dried in machine driers or evaporators. but there is some doubt of these figs being equal to sun-dried ones. In this respect different varieties of figs, no doubt, require entirely different treatment.

In packing, Smyrna excels both Portugal and Spain. We all admire the way the Smyrna figs are packed—it is the very perfection, and I believe cannot be improved upon. When the dried figs reach the packing houses, they are, as I said, again assorted by women, and then packed by men. While packing, the hands of the packers are constantly kept moist by sea water, which prevents the sugar sticking to the hands. There are two ways of packing: In the first the figs are flattened out in such a way that the eye of the fruit is placed very nearly in the center, and the stem very nearly opposite the same. The figs are now packed in layers in boxes, in such a way that the front margin of every fig just sufficiently covers the stalk end of the fig next in front. The figs are packed in straight rows the same in the bottom, middle and on top. To keep every row separate, and to prevent one row overlapping the other, I am satisfied that they use a small frame of iron, with partitions running longitudinally and vertically. The figs must first be packed in this frame and slightly pressed. The frame is now withdrawn from the box, and a heavy pressure is applied, which causes the surface to flatten out and become smooth.

The second way the Smyrna figs are prepared is this: Instead of being pulled or flattened out the fig is compressed sideways until it assumes the shape of a small bag or cube or die. Upon opening a box of such figs the surface resembles a checkboard, every square being a fig. I have no doubt but that in this mode of packing an appliance is used somewhat similar to the partitions in our common egg boxes, where each egg lies in its own square department. When all the figs are in position this partition is withdrawn and the figs are slightly pressed. These square figs are never pressed as heavily as the other kind.

The size of package used for the Smyrna figs has of late gradually decreased. The largest now containing 30 and 60 pounds. But smaller packages, as being much more handy, have become more common, and five and two and a half pound boxes are now sold most extensively. The smallest of all is undoubtedly the quarter-pound, oblong box, with one good fig on the top and with a few bad ones below, which are offered us by the railway boys. No uniform size is used, and it seems that different brands are packed in different sizes, according to the size of the figs, which always in the flattened varieties are spread out to the best advantage. The larger the fig, the more valued is the brand. The pulled and flattened figs are by the Turks called the Eleme.

But this word is not always marked on the box, two and three Crown London layers being a common brand for the better figs. Inferior brands are packed in drums, with less expense and less careful manipulation, but also with less pretentions. Of the other packing of figs, those bag or die-shaped ones, the finest brands I have seen were the Erbelli or Erbeyli and the Loucoum figs, especially the latter. Both Erbelli and Loucoum are the names of localities in the fig districts of Smyrna, and from examination of those figs I am confident they are of a different variety. They seem to me different both in shape, color and flavor.

The Portuguese figs are inferiorly packed in so called mats made of esparto weed. The best of those figs is the *Fico da Comadre*, evidently an entirely different variety from the Smyrna figs. The next best are the *Pharo* figs, taking their name from the port of *Pharo*, from which they are exported.

Drying in California.

In drying the figs which I have exhibited here to-day, I endeavored to follow the Smyrna way as much as possible. While we evidently have yet much to learn in regard to the drying, and manipulating the figs after they are dried, I still believe that we are a good way on the right track, and it will be for you to decide if my suppositions are correct. The variety exhibited at this horticultural meeting is the Adriatic, not only the best, but the only, which I have. so far, found suitable for drying for commercial purposes.

When the figs began to wilt and to show small white seams they were cut from the trees by means of scissors or knife, then carefully placed on trays similar to the raisin trays. I believe a further great improvement would be to nail laths across the bottom of the tray in such a way that they would form longitudinal ribs on the bottom, just the thickness of the lath, or about one-eight inch. By placing the figs with the eye elevated on the rib the sugary contents are prevented from leaking out, which else may happen quite frequently. The figs are now placed in the sun to dry. They were turned every day to begin with by hand, but when more dry, in the same way we as turn the raisin trays. Every night the trays were

covered over, and for this purpose it is best to have all the trays on one place, and not scattered around, as is the custom with raisin trays. The figs are sufficiently dried when they show the same dryness in the morning as in the evening. This is a point of great importance. If not sufficiently dried, they will afterwards puff up and spoil, as if they were in a state of fermentation. In the evening the figs may seem to be sufficiently dried, but in the morning they will be found slightly swollen and puffed. They must then be dried more. It is, however, a great danger to overdry the figs. Such figs will get a cooked and earthy taste, which afterwards will never leave them, and which will injure them or spoil their value entirely. It took from five to twelve days to dry the figs, according to the weather. When dry they may be dumped in sweat boxes for a few days, but the better way is to dip and pack right away. Now prepare a kettle or tub with boiling water, in which put enough of common unrefined rock salt, such as is used for cattle; table salt will not do. I believe the more unrefined is the salt the better. Sea water may be preferable. The latter and the rock salt contain substances which preserve the moisture of the figs and keep them pliable.

About three big handfuls of rock salt to one gallon of water is enough. When the salt is dissolved and the water is again boiling, immerse the figs for two seconds; immediately afterward thumb the figs, and work the eye of the fig downward and the stalk end upward; in fact, imitate the appearance of the imported Smyrna fig. This process is necessary. First, it distributes the thicker skin around the eye of the fig evenly, and in eating we thus get equal parts of the thicker skin and equal parts of the thinner skin. Secondly, it places the fine skin of the stalk end all on top, and when the figs are packed and pressed they present a beautiful smooth surface. I believe the dipping of the figs in boiling salt-water may be dispensed with if the figs are sufficiently pliable without it. But it is absolutely indispensable to dip the figs in salt-water, and during the thumbing of the figs the hands of the packer must be constantly moistened by salt-water or the sugar will stick to the finger and make the operation almost impossible. After having been dipped in the brine the figs taste at first exceedingly salt, all the salt being on the surface; but after a few days the salt works into the fig and gives the fig a peculiar appetizing taste, counteracting the excessive sweetness, which else would be too predominant. I have examined the best Smyrna figs microscopically, and I find that the white floury substance, which on old figs covers their surface, is entirely due to uncrystallized grape sugar, sweated out from the fig, and to small crystals of rock salt. I believe that in Smyrna when the box is packed, and before it is pressed, the whole box is immersed in salt-brine, so that the latter will fill all the pores and crevices between the figs, and thus kill any possible insect eggs and germs of fungoids or bacteria deposited on the figs, which afterwards would cause them to become wormy and spoil. In opening fig boxes I have often found the sides covered with the white incrustations of salt.

The heavy pressing of the figs, which is always so strong that it causes them to burst at the stalk end, is much objected to by the consumers, as it evidently defaces the figs. But nevertheless, this compression is absolutely necessary. It prevents insects from entering between the figs, and it prevents the air to enter and thus dry out the figs. Observation and practice has shown me this to be the case.

As my own crop this year has not been sufficient to place the same on the wholesale market, I have not pressed them as much as they otherwise should have been pressed, and my object was to keep the figs more intact.

As guide, however, to those who now enter upon the fig culture, I will here state what I consider necessary appliances for packing figs. Thus, four things are necessary:

1. One box of wood to hold the figs.

2. An iron frame or box with bottom just large enough to slip outside of the fig box and hold it tightly.

3. An iron frame without bottom or top to fit snugly inside the fig box. This iron frame has two or three partitions inside, also of galvanized iron, running parallel to two opposite sides of the fig box. This iron frame with its partitions can be roughly compared to a brick mold made for three or four bricks at a time. In packing Erbelli or Loucoum figs this iron mold should also have cross partitions and the whole then would resemble the partition used in our common egg boxes, only instead of holding eggs our mold would hold figs.

4. A press. The procedure of packing is now as follows: First insert the mold just described in the wooden fig box. This box will now be found divided by the partitions of the mold in as many chambers, but open from the top. Pack the figs in each longitudinal chamber in the way Smyrna figs are packed. When done press lightly. Now withdraw the frame by pulling it up. Insert the fig box in the first described frame and subject it to gradually increasing pressure.

I believe a press similar to what is now used by the Fresno and Los Angeles raisin packers would be the best for this purpose. This press is worked by levers, and can keep four or more boxes under pressure as long a time as required. When sufficiently pressed withdraw the fig box from the iron frame and nail on the cover. The figs are now ready for shipment. In case my description should not have been sufficiently clear, I may state that the iron frame, which slips outside the box is simply to prevent the fig box bursting open, when subjected to pressure. The frame, again, which goes inside only serves to keep the figs in rows and separate the rows. Without this it is impossible to prevent the figs overlapping, which very much detracts from their appearance.

Caprification.

I have so far not touched upon the practice indulged in in the countries round the Mediterranean, and there known as caprification. Before I enter further upon this most interesting subject, I will state as my opinion, founded upon my experience here, that, at least with the Adriatic fig, the caprification is not necessary, as this fig bears abundant and well-matured crops without the same. The caprification has been practiced by the Mediterranean fig-growers for 2000 years or more, or as long as any historical record can be traced back. The Roman naturalist, Pliny, who lived 1800

The Roman naturalist, Pliny, who lived 1800 years ago, described the same minutely, and, as in his time, the same *modus operandi* is practiced to-day. After him it has been seen and described by most travelers scientifically and otherwise. The following, in short, is the way the operation is performed: When the figs to be used for drying are of the size of a hazel nut, generally in the middle of June, wild figs of a variety called the Capri fig are gathered. Five or six of these are strung on a string, and this again is hung or thrown over the cultivated fig tree. As the tree is increasing in size from year to year, more strings with figs are hung on the tree, but more than six strings, with altogether about 30 wild or Capri figs, are never hung on the largest tree at one and the same time. The figs are hung on the trees about one hour before sunrise, when the weather is fine, and no wind blowing. If too many figs are hung on the tree, it is said the figs will either fall off or become inferior. The same operation is repeated with the second crop figs. What effect has, then, this caprification on the fruit of the cultivated figs? This is a question which has been asked repeatedly, but though some very prominent scientific observers have investigated the subject, the same is not yet to this day fully explained. Some very interesting facts are, however, known, and these are of sufficient importance to be here considered. The fig itself is something more than a seed vessel of a flower. The fleshy part is a thickened, hollow receptacle, closed, except at the very narrow opening called the eye, situated at the top of the fig. This receptacle on its inner side contains numerous minute flowers, crowded together and covering the whole of the surface of the cavity. These flowers are male and female, or staminate and pistillate. The female flowers occupy by far the largest room, and all the lower part of the cavity. The male flowers, again, the more or less narrow zone, immediately surrounding the eye of the fig. In the cultivated or edible fig the male flowers are generally wanting or rather replaced by barren scale-like leaflets. In the different crops, the proportion between the male and female flowers is quite different. The figs of the first crop, or the *bocorre* are those which carry the most male flowers. The second crop, or the "karmouse," carry few, and the third or last crop carry none but female flowers. As I said, except in the wild or Capri fig, the male flowers are seldom developed. In the figs grown in California, and which I have had opportunity to investigate, the male flowers were always replaced by scales; this has also been previously found to be the case in Italy, and Professor Arcangeli states that according to his own observations the two most generally cultivated figs around Pisa, the *Fico verdino* and the *Fico piombinese*, never have any perfect seeds developed, while the *Fico biancolino*, which is considered a semi-wild species, has, among numerous imperfect seeds, some which are easily germinated.

As an aid for those who are no botanists to distinguish between good and barren fig seeds, I will mention that if thrown in water the good ones will sink, but the barren or not fertile ones will float on top of the surface. If crushed the fertile one will be found to contain an almond-like kernel. The barren ones will again be seen to be only empty shells, but of the same size and of nearly the same color as the good seed. From a prominent botanist in San Francisco I learn, however, that both California and Australian figs occasionally have developed male flowers, but they always develop much later than the female flowers of the same fig and thus never can serve to fertilize those of the same fig, but only those of other figs. This fertilization, if it takes place, must therefore be made by the aid of insects. The part that these take in causing the maturing of certain figs was already observed by the ancients. They found that a small, yes very minute, wasp infested the wild or Capri fig, and that when transferred to the cultivated figs they prevented the same from falling off, or at least hastened their ripening.

To understand this better we will describe the Capri fig. This fig contains no saccharine matter, is of much smaller size, and when reaching maturity it dries up and falls off. It produces three crops. The first crop, which hangs through winter and ripens in April, is called in Italy *mamme* (by the ancient Romans *cratitires*). This crop is followed in June by the second crop, or what is called the *profichi* (ancient *orni*), and lastly the September, the third, crop is called the *mammoni* (ancient *fornitis*). If we now closely examine the second crop, or the *profichi*, when fully ripe, we see here and there a black winged insect emerging from the orifice or eye at the top; its hairy body is dusted over with pollen grains from the male flowers, adhering to the hair when the insect crawled through the narrow male flower zone. And if we cut open one of those figs, we find inside a considerable number of similar insects, all striving to get out.

These insects, named already by Linnæus *Cynips psenes*, are partly winged, partly wingless. The former, or winged ones, are females, the other, wingless, males. The winged females as soon as they leave profichi or second crop, visit the last or third crop, the mammoni, and deposit eggs in their female flowers. Similarly the winged females that develop in this crop, or mammoni, visit the yet young figs of the first crop, or the mamme, and deposit eggs in them. If now these Capri figs are hung in among the branches of the cultivated fig, the insects crawl out of the Capri figs and into the cultivated figs in mistake. Because, while the females with impunity can deposit their eggs in the Capri figs, they are ensnared into the cultivated figs by the sweet honey-like contents, and die in the attempt to reach the ovary of the flower. The eggs of the *Cynips* are not deposited loosely on the female flowers, but by the aid of the tube or ovipositor inserted between the branches of the flower stigma into the integuments of the ovule of the female flower, else the *Cynips'* eggs are said not to develop. The fertility of these Cynips is astonishing and a few of them is sufficient to pierce all the female flowers of a fig. This piercing of the flowers causes a kind of gall formation, which, while it does not prevent the development of the seed, causes the same and the whole fig receptacle to ripen prematurely. Perhaps in the same way as the wounds caused by the larvæ of the codlin moth hasten the ripening of the apple. That the caprification is practiced in Smyrna and in all the Mediterranean countries as well as in Portugal is an established fact. The wild fig or Capri fig is

in Portugal called *Figo do Toca* or *Chocho*. That the fig flowers can not be fertilized but from the pollen of the male flowers from other figs is fully established; be these flowers the male flowers of the cultivated figs or those of the Capri fig.

In the very choicest Smyrna figs, however, I have found numerous fertile seeds, but also many ones empty. If these good seeds are hybridized by the pollen of the Capri fig, they certainly will not produce figs equal to those the seeds were taken from, but rather hybrids between the edible and the Capri fig. I have from the choicest *Eleme*, *Erbeyli* and others raised several thousand seedlings, and the future will tell me if they produce hybrid fruit or not. Some botanists have advanced to me the theory that through long cultivation the highly cultivated figs similarly to the banana and the seedless grape and the melon shrub, have become entirely barren and both the female and male flowers lost their original functions. This, however, is contradicted through the seedlings I raised from these the finest figs.

In regard to the advisibility of importing the Cynips or insect that fertilizes the figs, I am told by a prominent entomologist of San Francisco that numerous other insects also visit the figs, and that we here in California have several varieties of insects which, so to say, would only be too happy to invest in our figs, provided we only are mutually accommodating to furnish them with the Capri fig.

To sum up my ideas of the caprification: I believe that the same is not practiced solely for the purpose of fertilizing the cultivated figs or prevent them from falling off, as we have proved that we, without this process, here in California produce as fine, and perhaps larger, crops—but also, and perhaps principally to hasten the development of the figs, perhaps for the purpose of getting them dried and marketed before the rainy season commences. If this should be so, then the caprification should correspond with the methods used by the French—the oiling and puncturing methods described above, which we know are solely practiced to hasten the maturity of the fruit.

Forests and Fruit Growers.

The following essay was read by Abbot Kinney, of Kinneloa, San Gabriel:

Forests are most important to the welfare of the human family. Their beneficial action may be regarded under three heads. First—There is the sentimental one, in which we regard the forest from its beautiful side. Second—There is its productive capacity. Third—Its influence on climate and humidity and therefore on agriculture and on health.

The solitude and quietness of the forest have always had their charms and delights for mankind. Its repose is tempered by the gentle movement of the rustling leaves.

The tall straight stems and the beautiful lines of the trees lead the mind insensibly to the contemplation of truth and of grand things. So we find the first assembly places of men to worship God were under trees. Our own ancestors under the Druids had their religious ceremonies in groves of spreading oaks. The wood has been congenial as well to science as to religion. Plato gave the world his thought from a grove.

This was the custom generally of the Greek philosophers, and their name for a grove, "academy," has been added to our language, meaning an educational institution. Great men have almost always loved the forest, and have retired to its sheltered glades for rest and thought. Not only is this true of heroes of the past, but the leading men of our own day show the same leaning. Gladstone, in England, seeks the grove for his leisure hour, and in our own country the President has but recently returned from the Adirondack woods.

He who cares nothing for the forest, who has no love for any tree, has such a perverted nature as to be unfitted for sympathizing with human thought and action, and therefore of controling human destinies.

There is a business side too in the beautiful view of the forest. The public parks are but imitations of the natural woodland glade—no city in our country from New York with its Central to San Francisco with its Golden Gate Park, but enjoys and prizes above any other public ground these miniature forests and none but derive health and advantage through them to their people. Some of the largest parks in the country, as the Yellowstone National Park, the Yosemite Valley, etc., are mainly dependent for their attractions on the preservation of the forests in their native state. Such parks are of great value to communities: giving health and pleasure to those who avail themselves of their privileges and attracting travelers from distant lands, who make work and business wherever they go. The protection of the Yosemite Valley in this State has brought thousands on thousands of tourists to our borders, and has added materially to the prosperity, first of those ministering directly to their wants, and through them to the whole community. Such a reservation on the second Sierra Madre range in this county, where beautiful scenery of mountain and forest now exist would surely be of benefit in the way of advertising the locality and attracting strangers to our community, and also providing a public resort for our own people. The forest from its productive side is of still more importance.

What trade or business is there into which wood does not enter directly or indirectly? Wood is used from the farmer's plow handle to the banker's desk, from the pew and pulpit of the church to the gallows where the criminal disappears from society, from the gallant ship that sails the sea to the little skiff of the fisherman. In this country our houses, churches, and schools are largely built of wood, and always furnished with it. In fact, everything from the railroad car running on express speed to the boy's top are dependent on this material for existence. Even coal, its substitute as fuel, is only a preserved and solidified form of wood, mined by picks with wooden handles, taken up with wooden-handled shovels, run out on wooden cars, and taken to market in wooden wagons, canal boats or other vessels.

As might be expected, when we think on all the uses of wood, the annual consumption of this material is greater than that of any other in the country, having been, according to the last census, $700,000,000 (seven hundred million dollars).

Prof. Eggleston estimates the products of forests for last year at $800,000,000. This is considerably greater than corn, our largest agricultural crop, is over double our wheat crop,

and more than the combined value of the crops of hay, rye, oats, barley, buckwheat, potatoes and tobacco. It is 10 times the value of the products of all this country's mines of precious metals. The capital invested in the lumbering business alone now is over $200,000,000.

The wood used for domestic purposes, according to the census of 1880, was valued at $321,962,729.

The supply of railroad ties for one year has required the cutting of a forest area as large as the States of Rhode Island and Connecticut. As these ties require renewing about every seven years, this necessitates more than 56,000,000 ties a year, or the timber growing on more than 560,000 acres; so allowing 30 years for the growth of such timber, there would be required an area about the size of New Jersey, Maryland, Delaware and Connecticut to produce this amount annually and regularly.

That is, dividing such an area into 30 parts would give the ties needed for each year on one of the parts, and when the last lot had been cut the first would again be ready.

The timber now standing in the United States will not, at the present rate of consumption, for all purposes, furnish a supply for over 20 years. I regret that this time and place will not allow me to give Prof. Sargent's exhaustive figures proving this to be the fact. We should not think that California is safe from so near a wood famine. Only a few weeks ago some Eastern lumbermen came from their exhausted fields and located themselves in the Sierra Nevadas, and intend to put $3,000,000 into the business. With the destruction of Eastern forests such items of news will be very common, and our timber must be swept out of existence into the Eastern market. The annual forest production is greater than that of anything else in this country. It seems clear that the preservation of this productive capacity is highly important.

There is no trade or industry that will not be materially and unfavorably effected by a falling off in the supply of lumber and wood, unless we except those industries that would at a greatly enhanced cost supply a substitute for it, as by making iron hoe-handles and the like. The materials of the carpenter, the pegs of the shoemaker, the wheel of the wagon-maker, the domestic fuel of the countryman and a thousand things will become scarcer and dearer as the forests disappear. Many trades will go with the trees—the cheap and healthy wooden house we shall know no more.

To preserve some reasonable evenness between the supply and the demand of wood, the forests must be guarded against improvident working, the renewing power of the trees must be maintained, and, most of all, the gross waste and wanton destruction of the forests by animals and fire must be stopped. Those especially interested in wood and lumber products, and those dependent on this supply, should be the first to exert themselves to bring about these results, otherwise such persons as carpenters and all wood-workers will before long be without an occupation.

The lumbermen can do a great deal in this direction. * * * * *

The Canadian Government now controls the working of all government timber land and charges a price for the privilege, usually based on the stumps of the trees cut. Waste and destruction are by law prevented, fire being guarded against by obliging the lumbermen to clear up as they cut, that is to use or make safe disposition of the branches and refuse wood. Nearly every fire in the woods burns up more or less lumber and cord-wood and thus injures those who derive their support from the forest as well as the forests themselves. Mr. Little, a practical lumberman from Montreal, speaking in the Forestry Convention held in Boston during September 1885 said, "that an experience of 50 years convinced him that the lumbermen were the most to blame for forest fires and lost more than others by them. The reason why so much was lost by fire was the way in which the lumbermen cut the wood and left the branches. He believed that it would pay the lumbermen to be more careful in their management of camp fires. In 1880, the cut of lumber was 18,000,000,000 feet; last year it was 28,000,000,000 feet, a very rapid increase. In 1880, there were marketed about 146,000,000 cords of wood and 74,000,000 bushels of charcoal. This would clear in a year 30,000,000 acres of forest, an area about the size of New York State. Hewn timber posts, telegraph poles, etc., demand much wood. Ten million (10,000,000) acres of forest were either altogether destroyed or seriously injured in 1880 by fire. In all, there is an annual drain on the forests of over 50,000,000 of acres.

The waste is the most painful part of this whole business. In California one may see in the south Paisanos cutting the limbs from oak trees to sell for fire wood, leaving the trunks as too expensive to work; in other places lumbermen use the clear timber alone, leaving the branches and small wood to rot, or endanger the remaining trees by the heat of the fires that so often occur. In another place they only take the bark for tanning purposes, leaving the whole tree, save its skin only, to go to waste. In no way does it seem possible to prevent this waste and destruction, except by Government control and supervision; even if there were no waste, there ought still to be a control of the forests to preserve their recreative and productive power so fast disappearing.

This waste by man and fire has grown, until it now endangers the welfare of the laboring people of the country, of the timber interest, the greatest of the country, and perhaps endangers the productiveness of the country itself through climatic changes. It has altered from being carelessness to being a crime, and should be put an end to.

The third view of the utility of forests is one that ought to attract great and immediate attention in California, specially here in the southern part of the State.

The effect of the forests on climate, and consequently on all human activities, is well recognized. The Prussian Forestry Commission has demonstrated, by experiment under Prof. Muttrich, that the temperature of trees is nearly constant, at about 54 degrees, and that the temperature and humidity of the air is positively affected by forests. Thus, woodlands have a modifying effect, similar to that of the sea, upon the air that surrounds us, preventing the extremes of heat and cold, and of dryness that would and do occur upon lands when there are no trees. Rapid alterations of temperature are the causes of strong winds, storms,

heavy rains, cloud bursts, hails, etc. Forests reduce the violence and frequence of these, and distribute the rainfall more evenly and prevent the extreme and trying dryness always found at times in places from which more than the proper proportion of forest has been removed.

No one who has lived in a wooded country can have failed to notice that the roads after rains always dried fastest in the open, and that the mud remained longest in those parts of the way shaded by trees. Evaporation and rapid running off of the water is in such shaded spots less than in the bare, open fields. The roadway skirting the forest of Meudon has been often cited in this connection. The road is bordered by two drainage ditches, one on the forest side and the other next the fields. In the first ditch the water is always clear and trickles through it long after the rains cease, while on the other side a muddy rill runs only during the rain, to disappear immediately when the rain stops.

The valley of the St. Phalaz is another interesting instance from France. Here there are two valleys as nearly as possible equal in size and inclination of watershed, one bare and the other forested. In the first, heavy rains are followed by torrents which destroy the roads and wash away bridges, destructively rolling rocks and gravel into the bottom lands. After rains there is no water; everything is dry. In the forested valley no dangerous or damaging floods occur. The water remains clear, and persists after the rains cease.

M. M. Jeandel, Cautgril and Bellaud, *Gardes Generaux des Forets* addressed a memoir to the Academy of Sciences of France, in 1861, on this subject. Their observations were made in two basins of the Meurthe of similar size and inclinltion, but one destitute of trees and the other largely covered with them. Their extended and careful observations showed that in the bare basin it was either a flood or a drouth as regards the streams, while in the forest covered basin, rains caused less increase in the streams, while the waters of these persisted in a perennial flow. From St. Helena, Ascension, South America and South Africa come observations corroborating those already cited, many of which I have quoted in former papers on this subject.

The Willimantic Thread Company some time since accidentally illustrated the influence of plants on the atmosphere. The nature of the operations of this company demanded a reasonable and constant humidity of the atmosphere in their shops. To obtain this they had employed two men and a spraying machine, but Col. Barrows, desiring to increase the comfort and pleasure of his operatives, commenced the cultivation of plants around the factory and placed many in the rooms, employing one gardener to take care of them. The atmosphere was at once changed in character; the spraying machine was no longer needed, one man's wages were saved, and the operatives were surrounded by beautiful flowers and their lives made more pleasant.

Throughout Europe the view is held that from one-quarter to one-third the area of a country should be wooded to produce the best agricultural results. That is, leaving the flow of springs and streams aside, still the influence of forests upon temperature and general humidity is such that denudation of trees beyond a certain doint, although increasing the productive area, diminishes the total output.

With more work on a larger area, less is produced. This result, and secondarily the disappearance of springs, and the diminution of streams, consequent on the destruction of the woods, has caused every European Government except England, which is peculiarly situated, to institute forest departments, and look after and control the exploitation of wood.

One of the familiar illustrations showing the effect of trees on other vegetation is that plants under or sheltered by trees or belts of wood are less liable to frost and to losing their fruit by wind than those not so situated. What a few trees do for a small area many do for a large one, and we read now that peaches, grapes, and other fruits that formerly flourished in Canada, Michigan and other parts of America, have, since the general destruction of surrounding forests, ceased to bear so well as before, and, in many places the trees themselves have died and new plantations are without vigor or promise.

These results may not be wholly due to deforestation, but the greater injury now than formerly by frost through these districts indicates that a change has taken place in their climates, while at the same time a general destruction of forests has gone on.

In open plains the evaporation is very great not only from the soil but from such vegetation as may be found there. The excessive evaporation produces cold and frost detrimental to crops and also causes a desiccation of the air which is sometimes equally destructive.

Often in Southern California when the wind blows from the bare deserts the excessive dryness blackens and kills tender vegetation just as frost does. Were the mountains as bare as the deserts, as they certainly will be if much longer unprotected, these winds will be still drier and more injurious to agriculture. This is shown by the fact that, as we approach the desert and such places where the mountains are bare or offer no barrier to these winds, vegetation is more injured than elsewhere.

In the open, also, greater heat prevails as well as cold. In passing over a sandy field, the heat is greater than it is on a grassy one and on this greater than in a shaded wood. It is on account of these variations of temperature that columns of air change place more rapidly in open than in wooded countries. This action we call storms, whirlwinds, etc. It is probable that a tornado never originated in a wood.

The mitigation of frosts by forests operates again indirectly to favor vegetation. Dr. Williams of Vermont made some experiments on this point in Vermont in the years 1789 to 1791 inclusive, and his figures as published by Marsh show that there is an average difference between the ground temperature of the forest and open fields of about eight degrees. On January 14th 1791, he found the ground in an open field frozen three feet and five inches deep, while the thermometer at six inches below the surface of the ground in the forest stood at 39 degrees or seven degrees above the freezing point. Boussingault's experiments in France show the same results, while on the other hand, the snow remained in the forest long after it had blown away or melted in the open.

This is not directly important on our California plains, but becomes so because the snowfall in the mountains, as on the Sierra at San

Bernardino and San Jacinto, if it melts quickly, runs off in floods, while if the melting happens slowly, the springs fill up and the streams flow more evenly. The San Antonio and the range where the San Gabriel rises are also affected by frosts and snow. The Tulare and Fresno country is especially so affected. Thus, we see that forests affect vegetation, not only by the more even temperature and mitigation of atmospheric changes, but also by preserving the lowlands from floods and giving them springs and perennial streams.

This is a matter of the greatest importance to us in California. A large part of our agriculture depends on irrigation, and even where this is not the case, our domestic use of water requires the permanence of springs and wells. The mountains in this State receive the greater portion of the precipitation of moisture that takes place here, either as snow or rain. The rainfall at the base of Mt. Shasta is 60 or 70 inches annually, while at Sacramento it is in the twenties. At my ranch, at the base of the Sierra Madre, in the rainy season of '83–'84, 60 inches of rain fell, while at Los Angeles, 15 miles away, but 38 inches were recorded.

Probably in the mountains themselves a still greater difference would have been observed. It is true that rain gauges on the same building at different hights and in the same town at different points, but with other conditions equal, vary often as much as two or three inches for a season. This has been the case in Los Angeles city.

There are several rain gauges carefully kept there, no two of which ever agree. But the fact, I believe, has been universally recognized and observed that the rainfall on mountains is greater than that on adjoining plains. The mountains then are the reservoirs of the country. It is amongst them that our supply for the dry season falls, and it is in their soils, strata and fissures that the water must be held to flow off equally in summer, appearing in springs or in wells far from where it fell.

Whether the forests attract rain or snow is not settled. The authorities vary on the point. Draper is strongly against it, but others support the theory. In this country during the last ten years the rainfall in the Rocky Mountain region has had a marked decrease; forests during this time in that section from Utah and Colorado to Montana have been largely destroyed either for railroads, mining and other similar purposes, or by fire. During the same decade the rainfall in those States west of and contiguous to the Mississippi river, has increased while at the same time an extensive planting of trees has taken place in the district. Dr. W. M. Goodwin of La Crosse and Dr. L. Sternberg of Fort Harker, Kansas, with whom I have corresponded, say that springs have appeared where before unknown in that State consequent upon the planting of trees. Whether the rainfall has permanently increased or not, the springs have come with the trees. Mr. C. Grayden who has interests in the island of Santa Cruz in the Danish West Indies tells me that since the burning and destruction of the forests in that island the climate and rainfall have entirely changed. Everything is drier; the rain he says comes more violently and less frequently. During rains now, one can hear the stones and boulders roar as they are carried down the mountain sides to cover and destroy the fertile valley lands below. Cattle at times die of thirst and have often to be fed during considerable periods, none of which misfortunes occurred while the due proportion of forests remained.

Forests preserve the rains through their prevention of too rapid evaporation, by holding the porous upper soil in place, and creating with their leaves and decay the "humus," which of all soils is that which takes up and holds the moisture; and also by the conduits into the lower ground formed by their roots. Trees by these means allow the water to escape into lower strata, and finally, by the thousand impediments the forest offers, the waters are retarded and given time to sink. Water never flows to cut land on a wooded slope; this occurs only in the open. When the long mesa back of Pasadena was covered more or less with brush and native growth, water did not flow from it into the town center, nor did it ever flow into the swail extending to and across Colorado street, near the new school. Since these lands have been burnt over and cleared, things have changed and for the last two years during rains, water cuts gulches, injures orchards and lands where it never did so before.

In Europe such an irregular flow of water is called a torrent, and the records are full of their creation by reason of the destruction of forests, and of their extinction where the trees have been replanted: but this, of course, in consequence of the washing away of the soil where the trees are gone is very expensive. In the south of France, where the Government is reclaiming the country from the desolation that has followed the ruin of the great forests, Livy speaks of, they are carrying dirt up the mountains in baskets on muleback to start the little trees, and the plantations succeed very well.

When such trouble is taken and such expense incurred to plant trees, we may well conclude that it would be cheaper and better to take care of the forests in the first place. M. Blauqui, the distinguished French economist, in 1848 after visiting provinces in the mountainous parts of France once densely populated, presented a detailed memoir of his observations to the French Academy. He says: "The Alps of Provence present a terrible aspect. In the more equable climate of Northern France one can form no conception of those parched mountain gorges, where not even a bush can be found to shelter a bird; where, at most, the wanderer sees in summer here and there a withered lavander; where *all the springs were dried up*, and where a dead silence, hardly broken by the hum of an insect, prevails. But if a storm bursts forth masses of water suddenly shoot from the mountain hights into the shattered gulfs—wash, without irrigating; deluge, without refreshing the soil which they overflow in their swift descent, and leave it even more scarred than it was from lack of moisture."

"Man at last retires from the fearful desert, and I have the present season found not a living soul in districts where I remembered to have enjoyed hospitality 30 years ago."

Blauqui's account is one that could be easily duplicated. The result of hydraulic mining in this State is child's play, to what I have myself witnessed as the result of forest destruction in mountains. Many villages and even districts have been deserted along the Italian, French and Austrian Alps, on account of tor-

rents, and many others are in imminent danger of the same fate. The Talfer torrent at Botzen has been diked up year after year, until when I saw it in 1879, the bed of the stream was already even with roofs of the houses, and these are tall. The tower steeples of the villages of Schlanders, Kortch and Laas are lower than the surface of the Gadribach, and so the instances multiply beyond any handling in this paper. We have, however, several cases here at our elbows of the alteration of streams by the burning of the brush on their water-sheds. Mr. A. W. Canfield, Supt. of the Mission Water Co., of Santa Barbara, informed me of the results of a fire on the water shed of that stream, as follows:

1st. The green trees were replaced by bare rocks; thus, the beauty and attractiveness of the country was diminished; 2d, the streams took a torrential character, by land slides and washouts carrying off soil, sand and rocks, to deposit them again on lower grades in its course; thus, every rain filled up the water company's dam and reservoir with debris; 3d, while the east fork, with its forested water-sheds intact maintained its usual flow of water, the desolated Mission creek was so materially diminished in its summer flow as now to contain no more water than its formerly smaller tributary. Less severe fires have produced similar results in the Precipice and Kinney canyons back of Pasadena and San Gabriel. The summer water in both was less for some years after the fires that injured the brush and trees on their water sheds than before.

Col. Markham, Mr. S. Washburn, Dr. Rigg and General Whittaker, of Pasadena, are all familiar with facts showing the drying up of springs and trees consequent upon the destruction of trees. I am embarrassed by the mass of facts which I have gathered on this point. Time will not permit much longer attention to this subject. I shall therefore only give the last two cases that have come to my notice.

The Torrens river, Mr. Brown the forest commissioner of South Australia, says, has materially changed in character. Formerly water was to be found in it at all seasons, now the deep places have been filled by sand and gravel, and in places where formerly people crossed in ferries they now cross during most of the year dry-shod. Dew has also disappeared from many localities where previously abundant. The great destruction of forests in Australia is due mainly to the sheepmen who kill the trees by girdling, expecting the denuded land to carry more sheep than it otherwise would.

The next instance to be given is that of the Schuylkill river at Philadelphia. Sixty years ago the engineers estimated the summer flow of this stream at 500,000,000 gallons per day (five hundred million). In 1874, the minimum flow had dwindled to 250,000,000 gallons per day. The diminution is attributed to the cutting down of the forest at its source. In Europe measures have been kept of the depth and flow of the principal rivers there, on some of them for as long as 150 years. The Danube, the Elbe, Rhine, Oder and Volga, have all diminished in volume; where ships could once sail boats can now scarcely get along. Ten feet is a frequent lessening of depth, in these rivers.

These facts, as has been said, have forced European Governments to take protective measures in reference to their forests. It has not been a matter of choice but of necessity. It is their endeavor to maintain all waste places in forest, cutting the trees so that they will grow again, and maintaining about one-third of their surface permanently in forest. Few countries have less than this amount of land unfit for agriculture but good for trees. Alsace and Lorraine, the two valued ex-provinces of France, have 38 per cent of their surface covered with forests which pays a net revenue of $3 an acre. All the forests under Government management in Europe pay greater or less net revenue. That of India does so also, the last figures I have seen showing a net return of over $1,000,000 (one million dollars) for that dependency of England. Thus the Governments of Europe derive a revenue while preserving their countries from the fate that has overtaken the once cedar-covered hills of Lebanon, of Palestine—the land of milk and honey, now almost a desert, of Persia where most of our fruits originated, of Greece and of portions of their own lands. The pathway of civilization has been strewn with the wrecks of fertile lands. Forestry holds out hopes that these results are not necessary and may be avoided.

Our own country has no national forestry system, and the systems of the 16 States that have taken action in this matter are more or less crude and defective. The United States land laws now allow, one may almost say necessitate, the most barefaced frauds by lumbermen in search of timber. Mr. Goucher, a special Government agent, informed me not long ago that between five and six thousand fraudulent land entries had been found in the single timbered district about Mendocino county, the entries being made to obtain control of the timber. The Government is being robbed, the forest lands are stripped by lumbermen, destroyed by sheepmen and burned by fire with impunity. Only an occasional arrest without punishment breaks this monotony.

This property that is being thus destroyed and wasted under a system that permits, and even invites fraud, is the people's. Such a condition of things should be brought to a prompt and permanent close.

When we consider the consequences of unwise forest destruction and recall the deserts of desolation such destruction has caused we must be still more impressed with the necessity of a proper care of our forests in the interests of the people at large.

To this end I would suggest that the law providing penalties for burning forests be changed so that it would become an object for persons to bring to judgment guilty parties.

That the Government withdraw from market all its timber lands, cause them to be surveyed and those found necessary for the preservation of watersheds be permanently dedicated to that purpose; and that none be sold unless over and above the proportion required according to present experience for the best agricultural results through climatic action. The whole to be managed like the forest lands of Europe: while giving a net return by products to be still maintained forever forest land, and lastly the abolition of the present protective tariff on lumber which not only operates to place this great interest in the hands of a powerful pool but also sets a direct premium on the destruction of every acre of timber land in the country.

The wooded and brush covered mountains of California are almost altogether worthless for agriculture, but their importance as attractors, holders and distributors of moisture is vital.

The life of the springs and streams of this State is the life of every interest in it, and first of all the farmers and fruit-growers. We fruit-growers therefore should take energetic steps to secure the protection of our mountains upon which so much depends.

Action by the Convention.

Mr. H. P. Livermore stated that he desired to call the attention of the members of the convention to the dangers which might arise from the depletion of our forests, and to the necessity of their protection: that stockmen would frequently, to get rid of the brush, and in order to increase the amount of feed, start fires that would destroy the timber over a large area. Speaking of the damage from heaving floods caused by this general destruction of forest trees on the hillsides and mountains, and offered the following resolution, and asked for its adoption:

Resolved, that it is the sense of the Fruit-Growers of California, in convention assembled, that special protective legislation should be had by our State and National Legislatures looking to the protection of all existing forests and encouraging the creation of new ones, for the suppression, by severe penalties, of the devastating influences now rapidly deforesting the country.

Mr. Livermore (continuing): I have written this on the impulse of the moment, and I would only say that certainly no harm can be done by giving voice to such a sentiment from this body of representative men, and I would desire to offer with it the specific recommendations that are embodied in the essay which we have just listened to, and which seem to me eminently wise.

The resolution offered by Mr. Livermore was on motion adopted.

Thursday Afternoon's Session.

The convention reassembled at the appointed hour. Dr. S. F. Chapin, in the chair, announced the topic for the hour the discussion of the papers read during the morning session.

Dr. Congar, referring to the essay read by Mr. Kinney on forestry, said that, in his opinion, the matters there referred to were not the only elements that influenced the climate—the amount of rainfall, etc.; that the air currents were also important factors to be considered, especially the northern currents, which he believed were the best; that he had observed when at the mouth of Cajon Pass, it would be perfectly calm, but when he reached the summit of the pass there would be a gale blowing so that it was almost impossible to get through. These were matters that had been but imperfectly understood, and which our scientists should look into. He said: "Now, in my judgment, the difference in the seasons here does not so much depend on forestry as upon the zone which we are in, as located by the meteorological charts. It is between the 37th and 35th parallel of north longitude. When the northern currents prevail they are the condensing currents, for they are cooler, as a rule, and they meet the moisture-laden currents from the south. We are dependent upon those two strata of atmospheric circulation for our moisture. What did we have in 1862, before there was any trees cut away—before there was any fires in the mountains or anything of the kind to produce this disturbance, as is suggested in the paper on forsstry? We had the rain here, and have not had storms like it. We had two years ago a storm which, for this region, the oldest settler claimed was almost unprecedented; and we have had no fires during the last five or six years. What I have to say is this: Are there not causes back of these little local effects that have to do with the precipitation of moisture? I believe that there are influences that we know nothing about—in other words, that these periods come in cycles; no one scarcely knows how long. They may be 11 or 20 or 28 years in their recurrence, but they will bring us the periodical dry terms or periodical wet seasons. Of course, I know that if we put straw around our trees the moisture will be retained much longer, as we have all found out who are irrigating: on the principle that if you expose these surfaces to the hot sun you dry out the surface moisture, and the same effect would be likely to be produced by cutting away our trees.

Mr. Hatch: I believe it has been decided by scientific researches that the ruins of the Old World, and the depopulation of those countries where those ruins existed, have been principally, if not entirely, caused by the destruction of the trees, and in other countries, of later dates, similar things have been observed to a great extent. And I think that this convention ought to put considerable stress upon legislation in regard to the preservation of our forests, and the making of new ones in the localities where needed.

Mr. Wilcox: I have studied this question from various standpoints since I have been in this State, and especially around the Bay of San Francisco. I once met a sea captain who had studied the movements of the winds and found that they moved in a circle, and so I noticed in Nevada county in this State. Now, in the Santa Cruz mountains we have a great deal more rain than we have in the valley, and I have noticed that the wind coming in at the Golden Gate followed up over those mountains and carried the fog with it. A year or two ago I investigated the subject of artesian wells, and found that these mountains contained strata, as Mr. Kinney has stated, that hold water. There are layers of earth that are impervious to water, and by means of these are formed what I call blind or underground streams coming from the mountains, which, no doubt, discharge into the Bay of San Francisco, and the more of them we tap the less water we get. Now the question arises, if these Santa Cruz mountains are denuded of their forests whether we will get the same amount of rainfall and what effect it will have upon these streams. This is a very interesting question and one which I believe can be profitably considered.

Irrigating Orange Trees.

Mr. Smith, of Santa Ana: I would like to say one word to elicit discussion or information regarding one point in Mr. Garey's paper: that of cultivating the orange tree, and it perhaps pertains to all of our trees. During the past few weeks I have had occasion to pass by a small orange orchard in the district of Orange, and I noticed a peculiar method being pursued

(that is, peculiar to our section of the country), and I inquired of the gentleman why he was pursuing this method. He told me it was a method pursued in Pasadena, and consisted in making a circus ring around the tree, introducing the water, and then mulching and not cultivating around the tree, and if more moisture was needed, to turn in more water by a little channel right along the outer line of its circumference, and let the mulch prevent evaporation. He said that when the land is new, that is, before it had been cultivated for two or three years, it was very loose and very porous, and when they irrigated the water would in a very short time sink down through the soil and made available to the roots of the tree; but that owing to the constant stirring of the soil or from some other cause, the soil below where the cultivator strikes would become a perfect hardpan impervious to water. He showed me an illustration of it where he had irrigated some time before, where he could not work his land because of this impervious substratum, which was not there the first few years of his cultivation, and he had to wait until the water had evaporated sufficiently for him to get onto the land to cultivate it. He said that from experiments that he had made if this land can remain without constant irrigation and cultivation, but only irrigated in the winter with the winter rains, that the land will again become mellow. I would like to have that question discussed by those who have experimented, as to whether this constant irrigation and cultivation will not produce the impervious hardpan, so that the water will not accomplish the purpose for which it is put on the ground.

Mr. Garey: You may take a piece of soil perfectly adapted to orange culture, and irrigated continuously for a long number of years, say 8 or 10 or more, and in many cases a hardpan is formed. It is formed, I presume, by a precipitation of sediment carried with the water, and continuously putting on this water in irrigating that carries the sediment, these heavier particles are deposited in the soil and added to from time to time, until a substratum or hardpan is formed. I remember a number of years ago, in old San Bernardino, I was passing where men were at work on their orange trees that were quite old and very fine, but they had begun to die. They tried everything they could think of to resuscitate those trees. They had poured water on them, and finally they concluded they would dig down and see what was the matter with the roots, and they dug down about six or eight inches and found a hardpan, as hard as adamant almost, that wouldn't work, and they took a pick and picked this hardpan up by pieces and threw back the soil and the trees came out all right. Now I don't know exactly how this is formed, but I am satisfied that it is caused by continuous irrigation without proper cultivation. I know, too, that this matter of forming a circus ring, that the gentleman speaks of, around the tree and irrigating in that, is, I think usually done for convenience in irrigation, and where water is scarce. If water is not scarce, the usual method is to put two or sometimes four furrows to the row of trees and turn the water in and let it flow right down. As to this little ridge along by the trees, it is put there for two purposes: one is to hold the water and the other is to prevent the water from standing around and striking the trunks of the trees, which has a tendency to cause the gum disease, so-called; but where water is scarce, they make these circles for the purpose of economizing water. I think, further, they used mulching for the purpose of supplying the want of cultivation to a certain extent, because if you irrigate your orchard with these circles and rings it costs a good deal of money to make those basins from 6 to 10 feet in diameter, and probably the ridge a foot or 18 inches high around them. This has to be pulled up with a hoe and takes a great deal of labor. If you cultivate, of course you break these rims and the work has to be done over again. That you cannot afford to do, and hence resort to mulching. Now mulching is very good in its way, but there is a very serious objection to it. There is no better harbor or hot bed in this world to raise gophers than there is in these very places. You commence and make your basins in the spring and put on a foot of straw and leave it there until the fall, and I think, as a rule, you will find any amount of gopher work during the summer. Nothing is done to break up their holes and they accumulate there and breed and it is a danger.

Mr. Smith: Mr. Garey has not quite answered my question. From what I know of this gentleman's procedure he has given his grounds very thorough cultivation—that is, to the depth of three or four inches, and he claims that the more cultivation the harder this pan becomes. Now, I would like to ask how to make thorough cultivation and still obviate the forming of this almost impenetrable layer?

Mr. Garey: I will answer it in this way. I think it is unprecedented that cultivation will form a hardpan; in fact, I am inclined to doubt that cultivation under any circumstances causes a hardpan, except in this way. It is possible, and I think probable, that there are implements that are now, and have been used to cultivate the ground that have teeth of a character to enter the surface from two to four inches, with a kind of scraping character, that do not seem to dig up and loosen the ground but very little, except just on the top and they scrape the ground underneath. This is done very many times in the summer in Southern California in cultivating an orchard, and it is possible that that process, continually cultivating just the surface for two or three inches, and this scraping process, may pack the ground, it being wet and soft, until after awhile it amounts to hardpan.

How to Prevent Hardpan.

Dr. Lotspeitch, of Orange: You may cultivate ground two inches deep one season and it will form a hardpan. You may cultivate four inches deep and it will form a hardpan. You will cultivate four inches deep and irrigate it, and whenever you cultivate it down to that depth it forms, in six months' cultivation, about two inches of a hardpan. That is what it will form. Why? Because you can't go down every time a little deeper and a little deeper; if you did you would be plowing up China directly. But we commence and we cultivate four inches deep for a whole season, irrigating by the best possible means, and the rains come again and there is a hardpan. The remedy for that is to plow a little deeper than you have cultivated, in the fall of the year when the rains come and you have no hardpan to begin

next season with. But the constant process of irrigating and cultivating just a certain depth for a series of years would produce a hardpan that would be impervious, and therefore the trees would have to die in a short time; but if you will cultivate it two inches deep, three inches deep or four inches deep for six months, and in the fall of the year when the first rains come, plow that hardpan up and let it lie, you commence upon the primitive condition of the soil, and every man that cultivates and makes a success in orange culture will have to do that.

Mr. Hatch: That is very similar to what I would have said had I spoken first; but I would add to it that it is not confined to lands that are irrigated that this condition exists, but in all lands in our State. Now it is immaterial what causes this hardpan. The fact is it exists, and that condition of things must be removed to make our lands valuable to us in the production of anything, whether it be grain or fruit.

Mr. Wilcox: In relation to this matter I have, after considerable cultivation, found a hardpan formed underneath. This was adobe soil, east side of the bay of San Francisco. I have irrigated since then and I do not find any difference between irrigated and unirrigated lands in this respect.

Mr. Loop, of Pomona: In connection with this subject of irrigation I will give you an item of my experience. I have an orange orchard on gravelly loam that I planted 11 years ago. After about the second or third year I found there was a hardpan formed underneath, just at the bottom of our cultivation, and I found it necessary to use a sub-soil plow after the rains set in and break that up, and unless I do that every other year I find there is a hardpan formed, and, unless it is broken up, it seriously effects the roots of the trees.

Varieties of Fruit.

Discussion then turned upon the best varieties of the different kinds of fruits to meet the wants of consumers in the different seasons.

Dr. Lotspeitch: I am not a deciduous fruit cultivator. My opinion, from practical experience, is that the best orange is the Rio. My reasons are these: The Rio ripens and hangs on the tree as well as any other orange we can get. It is a thin-skinned orange; it is a full-meated orange; it is sweet and juicy. Then again, it makes a fine standard tree. The fruit is not any better than the Mediterranean Sweet—not a particle; but the tree of the latter is not as good as the Rio tree. Therefore, I say, to have a fine, nice tree you can plant the Rio and have equally as fine fruit. I find in the Eastern markets they can't tell the difference between the Mediterranean Sweet and the Rio, but they will say the Mediterranean Sweet, because the name has a great deal to do with it; often the name sells it. Again, the Rio is just as prolific as the Mediterranean Sweet, and the fruit hangs on the tree just as tenaciously. The Navel is a finer looking orange. It will sell for a better price in the market when it gets there, but when you commence to count up the number of boxes of the two I have first mentioned, in March and April, and compare it with the number of boxes you can get off the Navel tree in March or April, May or June, and you will find the predominance is in favor of the Mediterranean or the Rio orange. Still, the Navel will sell for more than either of the others in the market, from the fact of its lusciousness and its large size, but still it does not have a sufficient amount on the tree in the shipping season to justify us in raising it. I and my brother have 13 varieties on our place. We have made a success in shipping our oranges East. It only requires care and attention to put your fruit in the Eastern market at a profit. Two years ago we sold our oranges at $2 25 net on the tree; year before last we got $3 on the tree, and this year $1.18 on the tree; that is net, and we shipped them East and disposed of them ourselves, and we found, as I say to this audience, that the Rio has the preference of all our trees that we have planted out.

Mr. Garey: I am very much gratified to hear the doctor speak upon this subject in the manner that he does: I have the honor of being the individual that introduced the Mediterranean Sweet, and I am glad to hear it spoken of so highly. As I said in my essay, if I were planting an orchard, I would divide it and put part of it into Mediterranean Sweet and part of it Washington Navel, for the reason that the latter is an early orange, and the Mediterranean Sweet is a late orange, so you would have double the time to market your fruit. I would like to know where the Rio can be obtained.

Dr. Lotspeitch: I am not a nurseryman, and I am unable to answer the question. As to planting varieties, so as to have them ripen at different times, I say we don't want to market fruit at all till the last of March, and a Mediterranean or Rio will stick on the tree until the first of July and much better than the Navel—we can put them into the market for three months, and I think that is long enough for any man to market his fruit. I never plant a Washington Navel from the very fact that you have to market that fruit early or you would realize nothing from it, as was proven last winter in shipping fruit early to the Eastern market. We did not realize any profits from it.

Dr. Chubb: I believe that the fruit business is a growing industry, and we are all interested to know just now in this part of the State what trees to plant, not what special varieties of orange or apple, but in planting out new ground, shall we plant oranges at all or peaches, or shall we plant apricots, or prunes, or olives, or figs? And in this connection I would like very much to have the discussion for a few minutes take the shape of giving us information from the northern part of the State as to what they consider the future profitable branch of deciduous fruit culture. Very many of our people are partially disgusted with the orange business on account of the difficulties attending it, and are looking to prunes or olives or figs, in some localities, and we would like to know how to advise newcomers in the southern part of the State, who are inclined to plant out these varieties of deciduous fruits with a view to future marketable crops.

Mr. Hatch: We of the North have been considering somewhat the varieties that we believe the most profitable for propagation in the future, and from evidences coming to us from the sale of different products in the Eastern markets, have arrived at the conclusion that fine varieties of table grapes can hardly be produced in too large quantities. There is nothing probably so much desired, and in other lines than that we find that probably we have enough

pears for the present, and we have probably raisins enough for the present. By the time those that are now planted come into bearing they will supply the demands of our people, but we think that olives, in land that is adapted to them, the nuts of California, in land that is adapted to them, and the fig, are promising. It is a very opportune time in the history of California to consider that in the past we have had no fig that we could be proud of to submit to the markets of the East. I see here to-day a box of figs which I consider indicates the possibility of an addition to the fruit industry of California which will prove immense in its proportions. When planted in the proper place, properly cared for, packed and delivered to the Eastern fruit-eating public, I believe will be a large revenue from California figs.

Mr. W. H. Aiken: The question that has been asked is very important, and, indeed from the northern part of the State we also ask that question. Every one of us probably has been more or less troubled to know just what to plant. Generally the question can be answered by saying, Plant what you can raise best in your locality. If our people would first find out what the soil that they are living on is best adapted to, what the climate where they are living is best adapted to, they could then plant what would do best, and, in that way, would make the most money. That takes some time to learn. A newcomer going into a certain locality should make a great effort to ascertain from his neighbors, who are living in the same locality, what does succeed best and what will sell for the most money. Since this Eastern shipping question has come up, it can be answered farther, that we had better plant shipping fruits and shipping grapes, for the reason that most any table grape may be dried, although it may not make a good raisin; so with the fruits. When the question is asked what will ship East profitably and safely it must be a large, firm, well-developed, well-appearing fruit. You can take the peach, for instance, when it is raised at an elevation upon some of our low mountains or foothills. In our section, the Santa Cruz mountains, which is about 1500 feet above the sea, we can raise a peach that will go to Liverpool and arrive in good condition, as we have demonstrated repeatedly, while probably the same variety of peach grown ten miles away would not do any more than reach Chicago; and possibly would not go 100 miles and arrive in San Francisco in good condition. So I would say, you must raise that which is adapted to your soil and your climate. I asked a gentleman from Chicago the other evening how much grapes and other fruit the city of Chicago and State of Illinois would take, if we could place it there as low even as five cents a pound. He said he did not think that the State now produced enough fruit to supply that city and State alone. I believe in that statement and that we can place fruits and grapes in Chicago at five cents a pound and clear to the producer one-half of that amount. Fruits grown in the dry air and mild climate of California will stand a long shipment to the East, while fruits raised in Oregon and any place where the rains are frequent and heavy will not ship. We will never find a competitor in Oregon or Texas, or many other States, because of this fact.

Our apricots were considered by us utterly worthless, and little attention was paid to them until Judge Blackwood, of Haywards, had a little orchard that proved a bonanza for him, and from that little starter he said he believed he had ruined the State, by demonstrating that there was great profit in apricots, for everybody went to planting them north, south, east and west. Then followed the French prune, a very valuable fruit, but I believe there are only a very few places in the State adapted to the French prune. It needs a very rich soil, with climatic conditions likely to cause a successful growth of the tree. I repeat the general proposition, to first ascertain what your particular locality is best adapted to and stick to that one thing. Do not have a large number of varieties of fruit, for one may do well, and another not; but have large blocks of available fruit, so that if this shipping interest succeeds, the fruit will ship successfully and bring Eastern money here for it.

Mr. Sallee: We are happy to say to the emigrant who is coming to this country now, that it is no longer an experiment, as it was with the fruit growers who came here 10 or 12 years ago, as to where you shall plant certain varieties of trees, and as to what kinds will be the best for shipping. The prospect is that we can plant shipping fruits and depend upon shipping them with advantage and success, that we can tell the newcomer to plant in the rich damp soils of the lowlands, the pear, the apple and the quince, and upon the higher, drier, rich alluvial soils, the peach, the pear, the prune and the apricot. The orange we can say to them to plant upon the rich deep alluvial soils from the Sierra Madre mountains; the granite and the limestone, supplied with abundance of water to irrigate with. We are happy to say to the people of the North that we appreciate fully the importance of the deciduous fruit culture, and we know and appreciate where our advantage is in raising them, and we do see the advantages in this class of fruit in shipping them to the East, and though we can give many of these points to the newcomer, an experienced horticulturist who has been here 10 or 12 years will give you all the advice you want.

A Delegate: When I started on my place I had a range of a few acres in extent and wanted to know what to plant, and the answer was as Mr. Aiken has given—plant that which does best in your neighborhood, in your variety of soil. Well, I could not find out what did best, and although I knew that it was unwise in a certain point of view to put a small place into a half a dozen different varieties, still I felt compelled to do it, even if I had to take out five of the varieties in the future. I thought I would make some sacrifice to find a solution of this question, but I have not found a solution from this fact: I put in certain portions to apricots, pears, Muscat grapes, walnuts, and a few apples, peaches, olives and figs. The result is that this last season, only two years last spring from the setting out of the trees and vines, I had a phenomenal yield, both as to quantity and quality of apricots. The walnut trees are not large enough nor old enough to bear, but the sample taken of the walnuts from the four-year-old trees from the Santa Ana table exhibit were grown adjoining my place and my trees give the promise of doing equally well. The pears were all Bartlett pears excepting a few Winter Nelis, and

were equal in quantity and quality to anything I ever saw or heard of for their age. The Muscat vines yielded the raisins you see on the table, and there were eight tons to the acre. Now, I don't know what is the best variety of fruit to plant, because I don't know which is going to bring in the most money. That is why we wish the question answered by the people of the North, so that we in the southern part of the State can know what, according to their experience, is most likely in the future to bring us the greatest returns, provided we can raise all these different things equally well.

Mr. Aiken requested that Mr. Smith, of Vacaville, give the convention his experience and ideas as to what to plant.

W. W. Smith, of Vacaville: *Mr. President, Ladies and Gentlemen*—I would tell you plainly if I could what kind of fruit to plant to make the most money out of, for that is the question now before the people of this State. It is the all-absorbing question north, south, east and west. We have made more money out of our cherries than any other fruit. That won't do you much good, for several have told me here that you can't raise cherries, in some parts, at least, of this section of the State. Next, we make more money out of what we call shipping grapes—the Muscat of Alexandria, the Flaming Tokay, the Rose of Peru, the Chasselas, and one or two other varieties. Any of the light-colored grapes that are firm and ship well are good fruit to ship to an Eastern market to make money out of. Next, we ship a good many apricots East. The largest part of the crop of apricots of Solano county are shipped to the Eastern States this year. We have but few pears yet that have shipped well. We shipped a great many peaches this year to the Eastern market. A large proportion of my peach crop was shipped to Chicago. Parties came to my orchard and bought them. The varieties of peach that ship best are the Early Crawford, Foster, Orange Cling, known with us as the Sacramento River Orange Cling, and Solway. Any good-sized, yellow fleshed peach is in demand in the Eastern market. The yellow freestone peach is more sought for than any other kind; however, a good, yellow clingstone peach sells well. It is not for me to tell you here what kind of soil to plant these kinds of fruit on. That has already been stated plainly by several gentlemen. If I were going to start a new orchard anywhere in the vicinity of San Francisco, I would hunt a location where the apple does well, and plant largely of Winter apples. My humble judgment is, there is more money in a good apple orchard to-day, within 150 or 200 miles of San Francisco, than any other fruit you can plant. But the orchard must be in a locality where the apple does well.

I spent the months of August and September in the Eastern States investigating this fruit matter, as I intended to ship my own fruit on my own responsibility, and my conviction is that we shall have enough growing, when our fruit trees come into bearing, to supply the Eastern markets with deciduous fruits, and citrus fruits also. If Congress would impose an import duty of about two and a half cents a pound on raisins, the raisin business would be one of the best businesses in this State, and I would get a suitable piece of land for raising raisins, and go into that business. But as it is, we cannot make money by raising raisins in California in competition with the cheap labor of Europe. It is out of the question. They can hire help at 20 or 25 cents a day, and we have to pay from $1 to $1.75. That is too high to pay labor to raise raisins or prunes, either, but were there this import duty on raisins, and say 50 cents a box on prunes, it would make either a profitable crop.

You may say I have not yet answered our question, What fruit we shall plant to make the most money from? If I knew how to answer that question I would certainly answer it for myself, and go home and go to planting that fruit, and so would every one of you. The nearest I can come to it is to plant the fruit that grows best in your locality. You will be very likely to find a market for it if you take pains to raise choice fruit. Do not let your trees overbear; thin them thoroughly while the fruit is young; prune them correctly; cultivate your trees, or your vines as the case may be, thoroughly; gather your fruit in the proper time; put it up in the proper shape; handle it carefully; put it into the hands of the right kind of men—the California Fruit Union—and ship it East, and you will be very apt to make some money out of it.

I will tell you something about the quantity of cherries I ship: I shipped to market 20,000 ten-pound boxes of cherries this season, and I paid W. F. & Co., or the C. P. R. R. Co. over $2,500 to take that fruit from Vacaville to the San Francisco market, some 75 miles. My experience in shipping cherries to the Eastern market on my own responsibility has not been favorable. A gentleman from the city of San Francisco came to my place and bought something over two tons of cherries and shipped them to the Eastern market, to Chicago, St. Paul, Minneapolis, St. Louis, Kansas City, Denver, Boston, New York, Philadelphia, Cincinnati, and I think to Cleveland, Ohio. He did not make a success of it, but I was satisfied at the time that he would not make a success from the fact that he did not pack his cherries in the proper shape to go that distance. He was like many, a little too greedy. The contract was that I was to pick the cherries for him and under his direction he would send a man to my house to superintend the packing or boxing of those cherries, and he insisted on filling the boxes too full. He used the common strawberry box, which, as you know, is a little box about two inches deep, eight inches wide and sixteen inches long. I insisted on it at the time that it was not the proper box to ship cherries East in, but that was what he used and he had his man superintending the packing of them, and he filled them too full, so that in nailing on the cover there was scarcely a box but what the cherries were bruised before they left the packing house, and of course they could not go a six or eight day journey in good order. If I were going to ship cherries East, I would use a box about the size of the strawberry box, one-third wider, and have the ends higher than the sides, and fill the box about even full with the sides, and tack a piece of blotting paper across on the ends, leaving a space between the cherries and the paper, and I would nail the top on to that so there would be a space between the fruit and the paper, and a space between the top and the paper. I am satisfied that I can ship cherries from here to New York city, and they will arrive there in

good order, some varieties in particular, the black Tartarian, the Royal Ann or Napoleon Bigareau and the Great Bigareau: any of those will go to New York city in that way.

Mr. Chapin: What space would there be between the cherries and the paper?

Mr. Smith: I would leave about one-half inch between the paper and the cherries. The blotting paper would take up the moisture arising from the cherries and would keep them dry and firm, and if the package should happen to be packed upside down, the cherries would not bruise as they would if they fell against the cover of the box itself. If the blotting paper would cost too much, I would use a very thick heavy wrapping paper, such as is used in wrapping hardware, which would answer about the same purpose, though I do not think it would be as good as the blotting paper.

RAISINS.

Mr. Bettner: I want to say a few words in reply to the remarks of Mr. Smith about raisins which, as I understood was, that if we had a duty of 2½ cents on raisins it would be one of the most profitable of industries, and he would go into it. We have a duty of two cents a pound on raisins.

Mr. Smith: I meant was an additional tax of 2½ cents a pound.

Mr. Bettner: As a matter of fact we do compete very well now with the raisin-makers of Europe, although we would like to have the extra duty. The raisin business at present is a profitable industry in the southern part of the State and promises to be. All the raisin grapes in Southern California that were sold this year were sold at an average price to exceed $20 per ton, and the men who bought them are making money in curing and packing them at those prices, although they have some considerable risk to run, and I need not tell you that selling grapes at $20 a ton you can make money out of a raisin vineyard in a suitable locality. In Southern California there have been instances where vineyards have yielded 17 tons of grapes to the acre; that is an excessive yield, but an average of from five to eight tons is quite frequent, and there is no trouble in making a profit on that. There are several reasons why we can compete with the Malaga growers although they have so very much cheaper labor. First of all the average yield in Malaga is nothing like so heavy as it is in California. Then again the American understands how to save in labor appliances, and we have appliances for turning and handling our raisins which they do not, so that although their labor is so much cheaper I venture to say that it costs them not so far from what it costs us, and that I can state to this convention that the raisin business is a profitable business to-day in Southern California, and, so far as indications point, is going to be for years to come.

Mr. Rice: The Massachusetts Horticultural Society published a report that is tabulated from information received from all the principal fruit-growers of that section of the country, giving the best varieties of all the different fruits grown—giving say the five first best varieties and the five second-best varieties in each line. I would like to ask of our State Horticultural Board if it is possible for them to compile such a statement.

Mr. Hatch called for Mr. Sol. Runyon, of Courtland, Sacramento Co.

Mr. Runyon: I did not come here for the purpose of making speeches, but that I might look around and see what was being accomplished in this locality. As regards the varieties of fruit best adapted for shipping purposes, I can only say what in our section of country we make the most money from. We are shipping East from my neighborhood pears, peaches, plums and prunes mostly. The Bartlett is the leading pear; the Seckel comes next. Other varieties do not succeed; they are too early, while at other places not a hundred miles from there they do succeed. On our peaches, plums and prunes of different varieties the Sacramento river can hardly be beat in this State, and the varieties best adapted to shipping from our section are the yellow-fleshed peach, the different varieties of the Crawford, the Yellow Cling, the Lawler. As to prunes, we ship what is termed the Hungarian prune and the German prune.

Mr. Wilcox: At New Orleans our fruit was superior to that brought from any part of the world. There is not an apple grown east of the Rocky mountains that compares in size, or that is as clean and large as your White Winter Parmains. There is hardly a variety of apples grown here that they recognize as a specimen of the same variety grown in the East. When Marshall P. Wilder, who has been president of the American Pomological Society from Boston visited our oldest orchard, from which, probably, the first fruit was shipped East, now owned by Mr. Block of Santa Clara, he and his companions examined the fruit, and did not know it, could not place a name on it, and it was grown on trees that some of the party had shipped to this State. As to going to Massachusetts to find out the best fruits to raise, that is impracticable. We could not afford to do it. What we want is the best fruit we can raise in our locality. Here we have the best deciduous fruits raised probably in the world. Most of our pears originated in France; but the French table in New Orleans did not compare with the California table. There were men from Massachusetts at New Orleans, who claimed to know that we did not raise a good apple. I took a Rhode Island Greening and asked them if they could tell the variety. They did not know it, and it was not as clean and large as some which are on exhibition here. So far as our locality is concerned I would not try to hunt anything better if I had a good location for the White Muscat grapes, but I have not. I must raise such kind of products as my soil is adapted to. Near my place there are pear trees a hundred years old. I am going to raise pears. A heavy adobe soil where water comes close to the surface seems to suit them. I had 24 acres of blackberries that I am going to plow up, and I am going to raise prunes on that heavy land. I have an idea they will do well.

Nomenclature.

Prof. Husmann: I think I can offer some suggestions as to a matter that will benefit us all, and which every fruit-grower in the State should consider; that is, to bring some sort of order into the almost inextricable confusion into which fruit culture has grown. That is a question of names of varieties of names. This is clearly shown by the exhibits here both of

apples and pears, which are improperly labeled. How can you tell a man what he is to plant, when he does not know whether he gets that variety or not? We want a competent committee in each district of this State, working together, reporting to the State Horticultural Society, to try to bring some order out of the confusion. I wish to make a motion that a committee be appointed here to take into consideration the nomenclature of the fruits of this State, and try to bring some order into it, and to report to the State Board of Horticulture, at San Francisco.

Mr. Shinn: The matter of nomenclature is exceedingly important, but to accomplish the great object is a herculean task, and I would not like to be on such a committee. I believe if the committee were appointed to report at the next meeting of the State Board, it would do some good; but it would be years and years before it could be fully accomplished. If the committee is appointed, I hope it will be a general committee from different parts of the State, large enough to have a member in each locality, who will be wide awake at all exhibitions of the fruit interests of the different sections, making comments upon it and reporting at the different meetings and to the Board of Horticulture.

Dr. Chapin: This subject is one of vast importance, and of vast proportions as well. I feel that I am safe in saying that there is not a fruit-grower in this State that can go around this exhibit in this room and name every exhibit accurately. I know for one I would find it utterly impossible to name the fruits that are here exhibited. The fact is that in different localities of the State conditions prevail that are so widely different that the same fruit which has peculiar characteristics in one locality has entirely different characteristics in another locality. The White Winter Pearmain apple as seen here and grown in Southern California would hardly be recognized as the White Winter Pearmain of the northern part of the State. It is much the same with other apples that I might mention here. I have heard some of the most eminent pomologists of the coast in dispute about the names of certain apples that are on the plates in this hall to-day. I believe that this committee should be selected with the greatest care, and should have the most ample time in which to work in the most thorough and complete manner, in order to accomplish these most important objects.

Mr. Garey: This is a great task, but if we do not start about it we will never make any progress. It would probably be a whole year before a committee of this kind can make an intelligible report. I think it should be started in some way, and that very soon. I move that the State Board of Horticulture be requested by this convention to appoint a committee of five to be known as a "committee on nomenclature" of the fruits of this State.

Prof. Husmann: In connection with this motion I will state here that Commissioner Colman, of the Department of Agriculture, has taken one very important step in that direction already by appointing a special horticulturist—an office that never existed before—in the person of Prof. Bandman, of Geneva, Kansas, one of the most prominent horticulturists in the country, and he will do all he can to aid this committee, as he will visit us next summer.

Mr. T. J. Berry: I have been engaged in raising fruit since 1856, in the State of Illinois and State of Mississippi and State of Oregon and State of California, and also have been some time engaged in handling fruit in New Orleans. I have always been a close observer of these matters, and found that certain varieties of fruit assumed different characters as they came from different localities. I can speak particularly of the Bartlett pear, as, for instance, grown in Mississippi, in the vicinity of Grand Gulf, and placed on a plate with one grown in Ohio. They rarely present the same form, nor have the same flavor, the same luciousness or the same general appearance, yet they were propagated, to my certain knowledge, from the same identical growth. Now, the Bartlett pear of New York is entirely different from the Bartlett pear of the West. The Bartlett pear of California is entirely different from the Bartlett pear of the East, and just as this gentleman says who has this orchard at Vacaville, Mr. Smith, the reason why the Bartlett pear there is so profitable is that it is an early fruit. You do not want to raise fruit for size. Consumers are often more numerous for small than for large fruit, and you want to raise the fruit that will sell the best, and when you come to name your fruit it will be necessary to raise it for the particular locality in which they grow. The White Winter pear grown here is finer than any other portion of the State; plums grown in Sacramento and Santa Clara county are the finest. In Los Angeles counties the grapes are the finest I ever saw, and I handle a great quantity of grapes. How, then, is the mere name to satisfy the man who wants just such a quality of grape? How are you going to classify them to satisfy him?

Mr. Hatch: I would like to correct one little mistake. It is this: The Vacaville county does not produce the earliest Bartlett pears, where it does produce the early cherries.

What Fruit to Plant.

Mr. Smith: I would like to call your attention again, to a question that has been asked so often: What is the best fruit for us to plant to make money out of? The best answer, I believe, that any gentleman in the State can give is: "Plant that that does best in your locality." The reason for it is this: Our climate, our soil and other circumstances are so different and so variable that no definite rule can be given on that point; consequently, observe what does well in your own locality and on your own soil. There ought to be between every man's mind and his own soil a well regulated communication or understanding. He should know the soil of his own farm; then it is not a hard matter for him to determine what to plant in his own soil that will succeed. If you plant what is best adapted to your own locality and your own soil and take good care of that, you will not miss it. The motion of Mr. Husmann was carried, and the convention adjourned until 7:30 P. M.

Discussion on Fig Growing.

The convention reassembled at 7:30, W. M. Boggs in the chair. The discussion of the culture of the fig was declared in order.

Mr. Milco: A year ago at the meeting in San Francisco I presented before the convention a White Adriatic fig, in not only the green and

ripe state, but also dried. I did it so that the public and fruit-growers might judge of the quality of the fig. Now, of course, it has been the custom of nurserymen, and I am one of them, to recommend different trees and different qualities of fruit before you see the fruit, but my idea is, that if anybody has a new thing he should show the fruit, so that people could see the quality of it, and so on. Now I will be glad to answer any questions about this fig, because I was the one who introduced it and brought it before the public. I gave it that name because there have been a great many figs that are called Smyrna figs, and in order to distinguish this from any other fig I named it the White Adriatic, simply because I was born by the Adriatic sea in Dalmatia, and that fig originally came from Dalmatia. I hope that the people of Southern California will try it. I wouldn't recommend anyone to buy 1000 or 10 000 trees. My advice is to try a few trees and see what they will do, and, in a couple of years after you plant those trees if you find they do well you can propagate your own trees until you can't rest. I believe the White Adriatic is the only fig you can grow with profit, to dry, in California; and you can ship them. If we should happen to be successful in sending our fruit East through the Fruit Union, my opinion is that the White Adriatic can be landed in the ripe state for table purposes in New York City without any trouble, and if we can show such a fig as that in New York City, I will assure you that we shall be able to realize good profits from them. Mr. Hixson tells me last summer he received a few figs and they brought fancy prices in Chicago. There is no fruit so easily cultivated and taken care of as the fig; for the fig will grow anywhere.

A Delegate: Will it do well on comparatively dry land, with the surface water 60 feet from the surface, without irrigation?

Mr. Milco: I think it will if you start it for the first year or two. In my country it is never irrigated. Such a thing as irrigation is not known, and figs do finely.

Mr. Loop: I will ask if this is the variety known as the fig of Genoa?

Mr. Milco: I can't tell. I never was in Genoa.

Mr. Loop: There is a fig cultivated in Riverside which they call the Genoa, which was larger than any variety of white fig which I have ever seen in other countries, and as near as I can remember the fig at Riverside was really richer than the one we ate in Genoa.

Mr. Milco: Dr. Eisen has written a letter to the RURAL PRESS, wherein he stated that this White Adriatic was introduced from Italy, which was not the case, and he also spoke about the White Genoa fig, which he also recommended. I in return wrote an article concerning the State Fair and invited anybody who had the White Genoa to send it along, so that we could examine it. As I said before, people nowadays are not going to believe anything until they see it, and I advise in the future any man that wants to grow anything in the way of fruit trees, not to buy anything until he sees it, and then he will be apt to get something that he wants. There are several characteristics about that fig that I wish to state. One is, that if you give the White Adriatic fig too much water, the figs will burst on the tree before they are ready to be picked, and some of them will actually rot on the tree. Too much water won't do. You can regulate that. Still, they want some water in countries where it is dry, and my opinion is that generally in Southern California you will have no trouble to grow the fig any more than you will the orange or anything else, and it will pay you more than anything you have ever grown.

A Delegate: An orange tree is the most troublesome tree to grow there is.

Mr. Milco: Where I come from we have ripe oranges and lemons all the year around, and we never water them.

A Delegate: Do you have summer rains?

Mr. Milco: Once in a while we have, but not to speak of. I don't think we have as much rain in that country as you have here. It is similar to Los Angeles and not far from the coast, and you can pick ripe oranges there all the year around, and lemons also; but this White Adriatic fig particularly, I know, is adapted to California, because we have tested it fully in the San Joaquin valley and know what it can do, and I can not see any reason why it will not do well here.

Mr. Sallee: In summer the excessive heat caused almost the entire crop in the valley to rot and drop off the tree; was that the case with this fig.

Mr. Milco: I have never noticed this fig lose its fruit at all, but of course in a case of extreme heat that may happen to any fruit tree. We have had it 115° in the shade this summer, and 105° to 110° at midnight. We irrigated our trees about twice a year, in the spring of the year after the rains were over, and then again about the middle of July; not flooding them, mind you, but just running water alongside in ditches so that the ground could be soaked.

A Delegate: Does the tree bear two crops or only one?

Mr. Milco: They ripen about the 15th of August and continue to ripen up to this time almost one crop continually.

A Delegate: How is it if they produce but one crop that they commence ripening so early and continue so many months?

Mr. Milco: That is something peculiar about the White Adriatic. I suppose I have now five or six varieties of new figs that I have imported from Europe, of which the first crop will be very valuable and the second no account at all. The reason I make a distinction between the first and second crop is that there is a lapse of a month or six weeks during which you cannot pick any figs at all; with the White Adriatic from the time it begins to ripen you can go every day and pick a certain amount of fruit right along, until the winter and frost overtake the last fruit.

Mr. Hatch: I would like to ask if this crop you speak of is not in all respects similar to the second crop on our black figs.

Mr. Milco: Very much.

Mr. Hatch: The only difference being this: that we have two crops on our black figs by getting a small first crop on the wood formed the season before, while the second crop all comes on the wood of the season in which it is borne, and continues to come as long as those branches continue to grow.

Mr. Milco: That is what I desire to explain. On the White Adriatic the young figs

are grown entirely on the wood that is grown this summer. You will never find a fig of that sort on the old wood at all.

Mr. Sallee: In an orchard that I had charge of this year are two kinds of black figs; one dropped off the tree when it got ripe, the other a smaller fig which hung on to the tree and dried. The skin was very soft, and smooth and thin, and the fig was very rich and sweet. I would like to know the variety of it.

Mr. Milco: There are two varieties of the Ischia fig: one large and one small; the circumference of that is scarcely larger than a 25-cent piece. Is that about the size of your fig?

Mr. Sallee: A little larger probably.

Mr. Milco: I think it is, as near as I can remember that fig. It is not worth growing unless you want to grow them for shade trees, because if you have ever so many figs of that kind it would not pay you to market them. It is something like growing Flemish Beauty pears when you can just as well grow Bartletts.

Mr. Loop: I would like to know if you are familiar with the fig known as the Brown Ischia, a fig we have got, I think, from Mr. Garey—one of the largest figs we grow.

Mr. Garey: I think the fig Mr. Loop speaks of, the Brown Ischia, is one of the finest figs we have—one of the most prolific and early bearing. It sometimes bears the first year; certainly bears the second year from the cutting, and is very fine, but you can't dry it: it is too full of juice.

Mr. Milco: There has been quite an inquiry made for this San Pedro fig. Some 12 or 13 years ago I imported a lot of those figs and sold them, and of course some of those figs have been scattered all around, and this year for the first time I have seen the fruit from any particular tree that came from my stand; at least the man claims that it is one of those trees. The fruit don't look like the San Pedro at all. For that reason, I say, don't pay any attention in the future to the San Pedro until you can see the fruit. We have had several varieties for three years in the nursery, set out far enough apart so as to see the fruit, and, to our surprise, the fruit is falling off, and we can't say now what they are. Of course I know where they came from. My own father sent them to me and I knew the trees before they sent them, but I don't want anybody to take those trees or have any confidence in them until we show them the fruit as we do the White Adriatic.

Mr. Sallee: Tell us something about

Drying the Fig.

Mr. Milco: I will confine myself to the White Adriatic and the Black California. The Black California, if properly dried, is not a poor fig by any means. If well dried it will be almost as soft and fine tasting as our best Adriatic. Still, being black, there is something against it. Do not allow your figs to dry on the tree. Do not pick them off the ground, as some people do, but as soon as your figs are dead ripe, so they are quite soft and you see white seams on them, and the fig commences to wilt a little, then pick it carefully. Pick it by the stem; do not pull it off. There is no necessity of cutting it with a knife; pinch it off and lay it in a basket and then spread it on basket-work trays. Where I come from they have them made for that purpose from four to five feet wide, and eight to ten feet long, and have it arranged so that there are little holes between.

A Delegate: How would the wire trays do, such as are used in a drier?

Mr. Milco: I don't know as that would be as good, because the wire may have some influence from rust or something of that kind. I would rather recommend boards if you can't get the basket material. Spread the figs one after the other. Do not put two together, so that they will touch each other, but give them plenty of room.

Mr. Smith: What would be the objection to using trays we have for drying raisins on?

Mr. Milco: I think they will answer every purpose. If you have your figs out on the trays about five o'clock in the afternoon in August or September, they should be covered or taken in to prevent dew falling on them, or your figs may mold and will be soft.

A Delegate: What is the necessity if you have no dew?

Mr. Milco: If you have no dew you need not protect them, and if you can cure raisins without covering them you can dry figs in the same way. Another difficulty in drying a fig in this country is we have so many wasps and bees and all sorts of insects, and flies, and the fig being so sweet the wasps and bees and other insects swarm around them. The best thing I can think of is to have a covering of wire, so that the insects cannot get to the fruit, and the rays of the sun could go right through into the fruit.

Mr. Sallee: Did you ever try the oiled paper over figs in drying? This year the McPhersons are drying almost all their raisins under oiled paper, and the heat is greater. In fact, it is too great for the grapes when they are first put out.

Mr. Milco: I think it requires the sun: the heat alone will not answer. During the State Fair we had some dried figs and there was a man from Oregon who had a drier, and he wanted to try some of the White Adriatic to see whether he could dry them in his drier. I gave him half a dozen of them. He dried them and brought them back. They were no account in the world. They were black—something like those figs over here that Mr. Eisen sent. Mr. Eisen has the genuine White Adriatic fig, but the samples he shows are too dark for the White Adriatic. The treatment he gave them is something that made them too dark for a white fig. I attributed it to something of that sort. In tasting the figs that this man put in the drier, they retained all the milky taste of the fig. They were worthless; you could not use them at all. For that reason I think the rays of the sun are necessary to take that milk out of the fig, to perfect the the drying. Another thing: about every other day each one of the figs has to be turned over, and just as soon as the last spot of green disappears, and the fig appears perfectly white, then they are ready to take indoors. After they are taken in we take a large kettle of boiling sea water and using a perforated bucket we place quite 10 or 15 pounds of the figs at a time in the bucket and dip them into the boiling water for a second or two and instantly turn it right over and spread them over the trays, the same as before, and almost instantly they are dry. The mixture don't stick to them at all, and in the course of a day or so after the air strikes them

they are ready to be packed away. We packed them in almost all different styles, but I think the best way to do it is to pack it in tin cans.

Mr. Smith: Do you think common salt water would do the same thing as sea water?

Mr. Milco: I think it would, but it might be better to get some chemist to give you the proportions to make it nearly the composition of sea water.

A Delegate: How long a time does it require to dry?

Mr. Milco: In the early part of the season, in August I think, it would take about six days, but later on it requires a little more sometimes; it will take from 10 to 12 or 14 days to be completely dried.

Mr. Garey: To my mind the process Mr. Milco gives will have to be improved upon or we wouldn't want to go into fig culture.

Mr. Milco: My idea is that if something were done in the shape of that box that our friend sent out from the East (the "ripe fruit carrier"), with little partitions of wire gauze so that each partition would be placed in a different place the sun could strike from all sides of it, and we could just turn the package right over, and it would obviate all this trouble; but the figs have to be handled very carefully.

Mr. Smith: I see there is an objection raised to turning over, which I don't think amounts to anything. You take the empty tray and put it on another tray and turn it over, and you can do it just as well. I do not see why they should be handled any more carefully than raisins, and we turn raisins in that way.

Mr. Milco: But the grapes are very tough, and the figs are very tender.

A Delegate: Do figs get wormy as do other dried fruits?

Mr. Milco: Yes; for that reason they should be dipped in salt water. That is thought to kill all insect germs that may be deposited on them, and in the meantime it prevents insects from coming. They don't like salt, as a rule, and for quite a while there is a little taste of salt about it—not enough to be disagreeable—but after a month you would find them the most delicious fruit you ever tasted. Another thing I want to say, as a fruit-grower, that no matter what you put up in dried fruit do not send anything to market in a loose way, but brand with your name and the place where it is grown, and then if you have built up a name for your fruit, people will know where it comes from and send for it. My advice is never to imitate any one else. Always try to improve on what has been done, and that is the best plan I can give you, so far as the fig is concerned. If the black California fig is treated in the same manner as the White Adriatic you will find that instead of bringing three or four cents a pound in San Francisco, you can get eight cents a pound for it, and most likely more.

A Delegate: How about the destruction by birds?

Mr. Milco: I would go to work and plant a good many mulberry trees, and you will find the birds will go and feed on the mulberry trees in the first part of the season and go away and leave you and the figs alone.

Mr. Garey: We are very much interested in this fig question, and feel very favorably to the White Adriatic from what we know and hear. Mr. Eisen exhibited some at the State Horticultural Fair a few weeks ago, that were very much admired and created quite a sensation. If it should turn out that the fig produced but one crop a year, that would be decidedly against it. If it bears throughout the season it may be called one crop, but I think on general principles it may be considered that it is a continuous crop right along. If this fig does that it would be a great point in its favor. We would like to know that.

Mr. Milco: That is just exactly the state of things.

Irrigating the Fig.

Mr. Garey: Another thing that enters largely into the matter. I do not think you can ever make a success of fig culture for commercial purposes in Southern California without an ample supply of water for irrigation. I understand that Dr. Eisen has been writing on the subject and defending the planting of this Adriatic fig in any season; that it can be successfully produced without irrigation. Now, I think in this country the party who undertakes that will make a failure of the business. Our first figs are produced on the old wood, quite early in the season. A few of them are very large and fine, then those that are not so large, are very abundant. If we do not have an ample supply of water to irrigate the first crop, and perhaps the second, is all we get; the balance dry up and drop off. But if we have plenty of water we keep them bearing until the frost comes.

Mr. Milco: When I stated that there was only one crop, I meant to say that from the time it commences to ripen until the frost comes it is continually ripening, so that you can get ripe figs every day.

Mr. Chubb: And in the aggregate yields as many figs as the two crops.

Mr. Milco: I do not know of any other fig that will produce anything so much as this fig.

Mr. W. M. Williams, of Fresno: Some three years ago I got from Mr. Milco a lot of cuttings from a fig which he said had come from Dalmatia, giving him $97 for all the cuttings I could carry; I had a greenhouse and when I got home I cut those up, and out of that lot I had 1800 trees. The first year they grew from four to seven feet. I had also the Black California, and I was very anxious when the fall of the year came, because we do have a little frost even in semi-tropical Fresno that might kill the figs, but any way I let them grow. The frost bit my Black California, but my Adriatic came out unscathed by cold. I started them in the greenhouse until one little bud made its appearance—in other words I "calloused" them—I really did not start them in the greenhouse; only once in a while you would see a white root. That fall I cut off everything but one straight stock, and this year I started 8000 from the cuttings of that lot, perhaps planting 20 acres myself of them, planting them not closer than 25 feet. They are very vigorous growers, the fruit is excellent either green or dried.

A Delegate: What time should the cuttings be started?

Mr. Williams: That is owing entirely to the season. After they lose the leaves I would cut them immediately, and I put mine in the greenhouse as soon as I cut them and started them. But I think they ought to be cut and kept

damp until along in February if you propose starting from the cuttings in the open ground.

Mr. Hixson: I became very much afflicted with the fig fever some 3 or four years ago and made the assertion that I believed the fig would be the coming fruit, the next fruit that would have a boom. They made so much fun of me that I began to be rather sick, but I got my friend Smith over there to believe it too, and said I would abide by his judgment. Then I kept looking to see what kind of a fig would answer the purpose and carry out my idea that the fig was going to be the thing. When I was going East four years ago, a man from Healdsburg sent down a box of figs as a sample to know whether I considered it necessary for him to sort them out. They were just put in as they came. He said it was a fair sample but some were light color and others were dark. I suppose it was in consequence of the manner in which they were handled. As Mr. Milco said perhaps all the milky substance was not dried out, before they turned them over, to properly cure them. Those that were ripe came so near the regular Smyrna fig, that when I was going East I had two little narrow boxes which I carried in my pockets and had a package of prunes in one and the fig in the other. I would show them on the railroad and when I got to New York, I went into a house there, and talked on the subject of the prunes. I thought I was going to create a sensation there with the big prunes. The man looked at them, and picked up the fig and said, "That is the thing to bring the money; now you are on the right track; that comes pretty near being the thing," and told me how to make a little improvement; ought to dip them into sea water, and make the skins tender, so then I had another man to sustain me in my judgment besides Mr. Smith.

I came back home, and I think at the next meeting of the State Society I met Mr. Milco, and saw this fig, and I took a great deal of interest in it, and I think it certainly is the fig for California, and, if I am not very much mistaken, the fig is the thing that we want to plant. We do not want to quit everything else, to dig up orange orchards and plant figs, because there is so much of this country that can raise figs which cannot raise oranges. An important point in the matter of the fig culture is that the valuation of the fruit where it is grown with the duty added amounts to 10 cents a pound, so that would be the valuation at the custom house: 10 cents a pound. If we don't come quite up to that and could get seven or eight cents a pound it certainly would be a very valuable crop. We have been trying all this year to get figs. We had two customers that wanted each a carload of figs; one was willing to pay 15 to 20 cents a pound for a grade of figs that was manipulated so as to come up to a certain standard. The other was willing to pay from seven to nine cents for the fig that would come up to his standard. Of course one wanted what we call a manipulated, or rather cured fig, taken through a process of sea water, etc.; the other wanted just a dried fig, such as we get in San Francisco in in sacks, worth about two and a-half or three cents at the present time. I have been unable to get them. We have recently sent on probably as much as 4000 or 5000 pounds; I have written many letters on the subject but we never have succeeded in getting a great quantity. I do not suppose you could get to-day in San Francisco a carload of figs.

In regard to shipping the ripe fig: we made probably three or four shipments last year. I believe they all came from Vacaville; some were shipped in 10-pound cherry drawers, and they were three deep in the drawers. They were all rotten. I do not believe you could get one you could sell. A few lots were put on trays without being piled up, and they came through in very nice condition, and were snatched up at once. I do not remember the price, but it seemed like a tremendous price to us, and it was very evident to my mind that a liberal supply would sell very readily at good prices. If we get the refrigerating cars that will keep an even temperature, then we can carry the figs very well, and I think Mr. Milco's fig, judging from what attention I have given it, would carry more safely than any of the black figs we have.

Mr. Loop: Is this fig, in your estimation, equal or superior to the white fig of commerce?

Mr. Hixson: I could not tell. I never saw any of these dried. I think the fig that I saw Mr. Milco have down to the fair, when dried, was as fine in point of texture and the gelatinous matter, or whatever you call it, and in richness, as any fig we have imported. They were not put up quite as nice, of course.

Budding the Fig.

Mr. Gray: I would like to ask if any one has had any success in grafting the fig.

Mr. Smith, of Vacaville: I have had some experience in budding the fig; very little in grafting. It is rather a difficult tree to graft, from the fact that the wood is very soft and pithy.

Dr. Chubb: Dr. Congar's machine will graft anything.

Mr. Smith: I never tried that. You cannot take off the bud, as with the peach bud or the pear bud, and insert it in the same way. You must cut the ring right around the limb, say from three-fourths of an inch to an inch long, with the bud on it. Then take off another ring of bark from a limb of the same size; open the ring which has the bud you want and slip it into that cut and bind it around with cloth, covering it up to exclude the air. There is one precaution you must take. When you cut into a fig limb when the sap is up, the sap will exude from the limb. You must cut off your bark with the ring in it and you whip off the limb, leaving the stock where you insert your bud, and then insert the bud. In this way you can bud quite successfully; otherwise you will fail almost every time. The reason is this: that the milky substance that exudes from the limb or bark seems to sour and poisons the sap when it comes up the stock and prevents the bud from uniting with the limb, whereas by this treatment it does not poison the sap, and the ascending sap will unite with the sap of the bud.

New Fruits.

While I am on the floor there is one other thing I wish to mention. Mr. Milco referred to it somewhat and I desire to emphasize it, and that is, in buying new varieties of fruit never buy many of them at a time until you know what it is. You can afford to buy one or two and pay a high price for it, which you are almost sure to do in buying any new variety that springs up. Now, I have been hunting

for a certain kind of peach for the last ten years—have bought almost everything in the way of peach that has been brought out in the United States and even Europe—and nearly one-half of the time I will not have a new peach but something I have had in bearing on the place a number of years under a new name. If anything new comes up and you want it buy a few and prove it before you go into it to any extent. I have about 65 varieties of peaches on my place that I am testing, and I will say that one-half of those are old peaches that have been in cultivation a good while, sprung up under new names by someone who wanted to make money. A tree or two is sufficient to test a new variety. Prove it on your own place, and then if it is worthy of propagation, you have plenty of time to go to work and propagate them.

Mr. Gray: Speaking about shipping figs, I had an order last year from up in the mountains. They must have some figs. I put him up a box of green figs. He came down in a couple of weeks and said they had all rotted. He wanted me to try it again. I went and picked some that had begun to wilt a little and packed them in a 10-pound box, four deep, and in between the layers two or three thicknesses of paper, and put up three or four boxes. He took them in a lumber wagon for five days going up, and when he came down he reported that every fig was in good condition when he got there. They were the California fig. I think that picked at just a certain stage they can be carried to Chicago perfectly well; certainly if they were put up in packages not so deep.

As to peaches, last year at the horticultural meeting we had quite a nice discussion upon new peaches that had been propagated in different parts of the State, and created quite an interest. We had one peach which came to us by accident this year, and I would like to speak of it. It was an apricot tree that was budded on a peach and broken off, and the sprout came up, and we trimmed it and let it stand right there. I forgot all about the tree until the day before Grant was buried. I happened to be going through the orchard and there was this tree loaded with a very large yellow peach, freestone, and I think the largest peach I ever saw. I think that was really the shape of the orange cling, though a good deal larger than they usually get. It was very yellow with a reddish cheek, very solid meat, freestone and small pit. I think it is going to be a very valuable peach.

A Delegate: How is it compared to the Solway?

Mr. Gray: It is a very much better peach than the Solway. I think it is a little earlier, perhaps a week. It is a seedling we know. It is a sprout that came up from the root. We had a few trees that we called the St. John; perhaps some here know more about that than I do, but I believe that we haven't anything growing now that is nearly equal to it. It ripens very soon after the Crawford's Late, and is very near the size and shape of an orange cling.

Mr. Smith: I think you have something else than the St. John. The St. John, properly speaking, is the earliest yellow peach in cultivation in the United States. Some gentleman asks for the best two varieties for canning. If I were going to plant two peaches for canning of those which are generally known and in extensive cultivation, I would take the Susquehanna and the Solway. I do not know whether they would suit your part of the State or not, but they come nearer filling the bill in our part of the State than any peaches we have got.

Mr. Williams: Have you tried any of the Sellers?

Mr. Smith: Yes, sir, I have—both Seller's cling and Seller's free; also the Muir. I think that is the best drying peach in the market.

The Muir Peach.

Mr. Webb: The manager of Mr. Lusk's canning establishment told me that they would give one quarter of a cent a pound more for the Muir than any other peach for canning purposes. They say that the reason for it is its marvelous sweetness. It has more sugar in it than any other peach.

Mr. Smith: The Muir peach is a new peach, which is propagated only in our section of the country. It is as I said the finest drying peach in the market. I will give you my reasons, and I believe you will agree that they are good. It is a perfect freestone; the pit is very small—as small a pit as you will see in any peach of good size; and instead of turning to a dark color when it dries in the sun, it will gradually become whiter as it gets drier, a property I never saw in any other peach in my life, and I have been drying peaches for 25 years, more or less. It is very dry of itself; it is very fine meated; you take a knife and cut it open, and it will slip through like a hot knife. These are all good qualities in any peach. It is nearly the color of a lemon; it really ought to be called the Lemon free. Where they are exposed to the sun they have a little red blush. The peach has some objections, or rather the tree has. About one-third of the crop will be inferior in size, while the other two-thirds will be full sized. Another objection to the tree is, that it is hard to manage in the orchard. The brush is very fine, and it is not a rapid grower. The leaves are quite small and very much softened about the edge.

A Delegate: Other things being equal, which is to be preferred—the free or the cling for canning?

Mr. Smith: My opinion is that the clingstone will eventually be the canning peach, for as a rule clingstone peaches are firmer than freestones, and now there are being machines invented that will pit clingstone peaches as quickly as you can pit freestone peaches. If you want to plant now for canning in the future, I would plant one-half of the orchard in clingstone peaches, anyway. The sweetness of the Muir peach has been spoken of: it is a very sweet peach—more so than usual. I have a cling peach, yellow, almost as round as an orange, no red about the pit. The pit is very small and is very similar to that on the outside. That is a sweeter peach and cans better than any peach I ever saw; it is a clingstone peach, and when it becomes known it is going to be one of the leading peaches for canning. I don't know of anybody else that has it but myself and the old lady that I got the buds from near Napa City: an old lady named Porter, and the peach is named Porter. It was an old seedling tree in her yard.

A Delegate: Will you mention other clings for canning?

Mr. Smith: If I were going to select two cling peaches for canning, I would take what we know as the Sacramento river orange cling, or the Runyon orange cling, or the Canada cling, or the California, and there you have three or four different names for one and the same peach: I will mention that as one peach for canning. For a yellow cling I would mention the Tippacanoe; I know nothing better of yellow clings for canning than those two. Now, I have another, a white-fleshed peach that I got from Texas, one of the finest flavored peaches I ever tasted, and being a white peach would be fine for canning were it not that it has a little red pit and when you cook it every bit of it goes to the syrup and colors it. That is a serious objection to it.

As to the fig, I suppose there is no place that grows more than Vacaville; the first figs that go to the San Francisco market go from my neighborhood; the principal one in cultivation is the common California blue fig: a fig, I suppose, the old Spanish fathers introduced into this country when they first came here, the same as they introduced the common Mission grape. We have no fig that does better than that does, and no other figs that pay us so well. We are certain of two crops and when we have a late warm autumn we get three, and a man that gets three crops on a piece of land is pretty apt to get a good one. The first crop we take to the market fresh, the second and third crop we dry the most of, and put into the market as dry figs. The first crop grows so large that we cannot dry them.

A Delegate: How do you gather the figs off of those large trees?

Mr. Smith: We have stepladders eighteen or twenty feet long, and we get up and gather all we can in that way; the second crop we usually let dry and drop off, and pick them up off the ground. We have tested several other kinds of figs in our section of the country, with a view of getting something better than the common California fig: as yet we have not succeeded. We are trying to get a few that we can grow and pack, or put up in the same style or that will answer the purpose of the real imported Smyrna fig. We want to see if we can't equal those, or surpass them if possible, but as yet we have not found the fig that will do it, unless Mr. Milco's White Adriatic will fill the bill. Gentlemen, I am satisfied of the value of the fig, and I will corroborate what Mr. Hixson said awhile ago: there is no one tree we can plant in any section of this State where the fig does well, that we can make more money out of and make it easier than we can out of the fig.

Mr. Hatch: I want to say a few words about the Muir peach. I want to speak a good word for it. When it was introduced I planted several in my place, and I was out in the orchard when peaches of that variety were ripening, and when I found the peaches on the young trees I said to myself, I wish all of my peaches were Muirs, for different reasons. In the first place, on account of the seed, a small pit about the size of the first joint of your little finger, with a very slight pink tint; another thing, Mr. Prather, often a buyer for A. Lusk & Co., of Temescal, said, in a fruit convention in San Francisco lately, that it was the best peach they ever had to can, one peculiar characteristic being that the cooking never mushed it. In that respect it is similar to a cling, and, being so easy to remove from the stone without waste, is preferable to the cling.

A Delegate: Does the leaf curl?

Mr. Hatch: Not to my knowledge. I have never seen them curl. I have only had them two seasons. In regard to the growth, I was surprised to hear Mr. Smith say the wood was willowy and the leaves small. It is not so with me. It has good growth, large stock and large leaves, and is a very thrifty, good growing tree. Trees planted from dormant buds last winter, starting the year ago last spring, are higher than I can reach this way, with a spread as wide, and this year produced some peaches, but not many. Another thing in regard to the fruit is that most peaches when over-ripe become distasteful. I found these peaches on my trees almost drying up they were so ripe—so ripe they were very soft, and yet the taste was delicious, something very peculiar in a yellow peach.

While I have the floor, I want to say something in regard to the general subject in discussion to-night, which, I believe, is in regard to such fruits that have not been overdone, or for which there is apparently an unlimited demand. There is a kind which will require to be put in good packages, which can be produced in every locality in the State, for which there is no end to the demand. I was in hopes you would ask me what kind of fruit it is. It is *any* fruit which you can produce *better than any other* in the locality in which you live; grow that and put it in good packages, there is no end to the demand for it.

Mr. Wilcox: One thing in reply to Mr. Williams. I can answer about the Seller's peach; that peach was originated by my wife's sister, Mrs. Sellers. There are two kinds, the freestone and the clingstone, and they are regarded as a very superior peach. The few that were raised four or five years ago sold to the San Jose cannery, and the next year the entire crop of about an acre sold for four cents a pound.

Mr. Shinn: A few words in regard to the Muir peach: I was assured by a very reliable gentleman, two years ago, that it has a property which has not been mentioned here to-night, and is certainly the most valuable property that it has. That whereas in ordinary freestone peaches it requires six or seven pounds of green fruit to produce a pound of dried, the Muir peach will produce a pound of dried peaches from four pounds. That is a very important point. In reference to the Sellers peach, I procured the original buds from the sister of Mr. Wilcox, in Contra Costa county. The peach was sent to me as a very valuable one and I was requested to enter upon the culture of it, and I did so, and saw at the moment that it was a very valuable one. I wrote to know all about it before I would have anything to do with it, and the lady said that all she knew of it was that there is a stray tree in the pasture growing without cultivation, with no attention paid to it, and it always grew large valuable peaches; the canners always thought very highly of it, and she said she was always persecuted for buds because it was large, and because by the time that the pit is extracted, by the machinery that is now used for the pur-

pose, there will scarcely be a line of red upon it, and of course they liked it on that account. Now it is worth while to say, after all the consultation I have had with the canning factories, and their secretaries and their presidents, with reference to peaches, that upon the whole they prefer the yellow peach; that is, they want more of them, but they do want a white peach; they consider it of the greatest importance to find one that is white to the pit, and until the McKevitt peach was found, I know of none that was a good peach and didn't curl.

Mr. Webb: How does it compare with the Lyon cling that was exhibited last year by Mr. Williams of Fresno?

Mr. Shinn: I do not remember. I have paid great attention to peaches, and if I were to advise anyone in reference to planting peaches, I would give the same advice that has been given to you, plant such as succeed well in your neighborhood, avoid all that are liable to curl, no matter what other qualities they may have. It ought to be said that most of the canners that I have anything to do with say that they do not like the Solway peach. The Susquehanna is certainly equal to the very best for canning. Everybody knows that the Crawford Early is a very popular peach, and so is the Foster, but it should be remembered that they ripen so nearly together and a person planting is not obliged to plant both for a succession. He had better not do so, and it is my opinion that the Foster is preferable to the other. I am not speaking as a nurseryman but as a fruit grower, and I have been growing fruit for 29 years. The Crawford late has many of the best qualities of a peach, but it will curl three years out of four. The Crawford early has been so long in cultivation that it is but reasonable to suppose that some of its good qualities have run out. One fault is that it is inclined to grow double. It has been grown from bud to bud generation after generation, and it is but reasonable that it should degenerate some—still it does not curl, therefore it is valuable. But the Foster being a new peach about the same size, I believe it is preferable to plant. The important point, if you are going to plant peaches, is to avoid those that curl, and endeavor to have a succession in the time of ripening. You cannot go earlier with yellow peaches than the Foster, for the early St. John, though a good peach, is not desirable.

Mr. Milco: I want to ask you something about Shinn's early white peach.

Mr. Shinn: It is worth nothing. It is a nice peach in itself, but it has a tint that is objectionable. The white tinted peaches are very much more liable to curl as a rule than the yellow peaches.

The Adaptations of Varieties.

Dr Chapin: I do not lay claim to being an extensive peach grower, but I desire to call attention to this fact which is one of the most important ones in this whole discussion of fruits. Taking the peach, for instance, we must be extremely careful how we plant upon the assumption that any one particular variety or 2 or 3 particular varieties are adapted to every locality where peaches are grown. Some of the peaches that have been named by Mr. Smith this evening as being extremely well adapted to his locality, to Vaca valley, are utterly worthless in many other localities of the State, and it would not be wise for you to plant upon that assumption. The peach of many names, which he has given to you to night, (the Edwards Cling, the California Cling and many other names attached to that one peach), in Santa Clara valley is a perfect failure. I have planted it from buds and dormant buds and the tree itself is a very serious failure, has a curled leaf and the fruit is very inferior indeed. I have made experiments with quite a large number of peaches, with a view of finding a few good peaches for family use in the portion of the Santa Clara valley in which I reside. It is not a peach locality and it is useless to attempt to grow peaches for market purposes in such localities. The best success that I have had has been with certain California seedlings. I may mention that among the very choicest of those has been the Seller's Cling; the McKevitt Cling and another, the Wilcox Cling or the Albright Cling from Placerville in El Dorado county. Another peach which is proven to be one of the very choicest for canning purposes is not known generally in the State, but it has been put up this season by the Yuba City Packing Co., a new cannery establishment in Sutter county: it is the Tustin Cling, and some cans sent to me by one of the stockholders, when turned out on the table proved to be the very choicest peach that I ever saw put in a can by any packing company in the world, and that is saying a great deal. I might speak of some other peaches. As to the Muir, that peach, with me, has not been a great success. I have it in two different portions of my orchard, and right by the side of it in one portion stands a seedling peach tree of very similar character to that as to color and other qualities—the same peculiar appearance of the lemon color and whiteness. It is called the orange peach, and it originated with Mr. Loomis, in the Santa Cruz mountains. He gave me buds, and I have fruited that right by the side of the other and it was a superior peach to the Muir. It is one of the finest peaches for drying purposes; and Mr. Loomis told me, when he gave me the buds three years ago, that the returns from that were a little better than that of the Muir peach in drying. That peach, I am satisfied, will become one of the most valuable ever planted in California, as I also regard the Muir to be one of the most valuable peaches we have, and from which the best results are to be obtained. I believe these seedling peaches that are are gradually discovered in various portions of the State (and some of which have not yet been heard of) and which have been found to be extremely valuable in a homestead in a single place, by the family where they originate, one by one will come to light and become disseminated throughout the State, and the good qualities gradually become known. A very choice white cling peach, perfectly white to the pit and very similar to the peach that Mr. Williams spoke of last year is to be found in Porterville, Tulare county; it is known there as the "Sheep's Head," merely a local name for it. The farmer raising the peach don't know anything about it, excepting that it is a very fine peach. I might go through this to considerable extent and name seedling peaches that I have discovered through the different portions of the State, and many of them will become gradually known; and I am satisfied

that, in the course of a few years, we will have discovered for all the various localities of the State the fruits that are best adapted to them, and then we can arrive at the conclusion as to what will be the best fruit to plant in a certain locality, and we can not do it in any other way.

A Delegate: Has this peach a blush to it?

Dr. Chapin: Very little; that is, only in the skin—not a particle in the flesh. It is an oblong peach with rather a broad and flattish stem, under a pointed sort of a nose that somewhat resembles a sheep's head. Something was mentioned as regards the size of the fig tree. One of the largest fig trees in this State is on the ground of the Hon. Henry Wilson, a a member of our board, in Tehama county. At Snelling, in Merced county, can be seen quite a large number together of the very largest fig trees in this State. There are several trees there in the orchard of Mr. Kelsey, in Snelling, that the spread of the limbs would be a great deal more than the length of this hall.

Mr. Webb: Mr. Wilson, you cut down one of those trees; how much cordwood did you get out of it?

Mr. Wilson: Sixteen cords of stove wood.

The Fruit Union.

The resolutions offered by the committee on Fruit Union are here presented and adopted as read:

Resolved, That the California Fruit Growers' Union is, in our opinion, destined to be of incalculable advantage to the interest of the fruit-growers of this State, and that the gentlemen who have given their time and labor to bring about that Union are deserving of gratitude from the fruit-growers of the whole State of California.

Resolved, That it is the sense of this committee that the interest of the fruit-growers of Southern California for the time being will *best* be served by the incorporation of a local organization.

Resolved, That this committee recommend the Board of Directors of such local organization when formed to consult with the directors of the California Fruit Union to the end that both companies may act in harmony and to their mutual advantage.

O. H. CONGAR,
JAS. BETTNER,
S. W. PREBLE,
ABBOT KINNEY,
THOS. A. GAREY,

The convention here adjourned until to-morrow morning at 10 o'clock.

Reports on Fruit Exhibits.

At the afternoon session of the fourth day, reports of committees on fruit exhibits made during the convention were received. Mr. Garey presented the report of the committee on citrus fruit exhibits as follows:

To the State Fruit-Growers' Convention:—We, your committee on citrus fruits, beg leave to report that we have examined the exhibits in Agricultural hall, and find the following localities represented by the citizens hereinafter mentioned. The display is, considering the season, highly meritorious, and reflects great credit on Southern California and the enterprising gentlemen making the exhibits from the several localities:

Santa Barbara—Elwood Cooper exhibits 1 plate Mexican limes; 1 branch olives; 1 bottle olive oil, his own manufacture from the olives, very clear and of first quality; 2 plates and 1 box seedling lemons; specimens green oranges.

Los Angeles—A. Weis, Alameda street, 1 banana plant with green fruit and bloom; 3 plates seedling oranges. J. W. Wolfskill, Alameda street: 1 plate Wolfskill's best oranges; 1 plate Tangerine oranges; 1 plate Mandarin oranges; 1 plate paper rind St. Michael oranges; 1 plate large St. Michael oranges; 1 plate Rivers' late St. Michael oranges; 1 plate myrtle leaf St. Michael oranges; 1 plate Washington Navel oranges; 1 plate Dwarf Mandarin oranges; 1 plate Variegated oranges; 1 plate Japanese oranges; 1 plate Seedling oranges; 1 plate Bouton lemon; 1 plate Eureka lemon; 1 plate Villa Franco lemon; 1 plate Anatie lemon; 1 plate Bonny Broy lemon; 1 plate Genoa lemon; 1 plate Imperial limes; 1 plate Mexican limes; 1 plate Sweet limes. Mrs. W. D. Bigelow: 1 box seedling oranges; 1 bunch green dates; this is a remarkable production, adding one more to the long list of our productive possibilities in Southern California. William Niles, Washington street: 2 plates seedling oranges. A. F. Kercheval: 2 plates Mexican limes. A. Pratt, Lemon street: 1 box Mexican limes. F. M. Trapp: 1 cluster seedling oranges; 1 box seedling oranges; 1 box Mexican limes. H. Preston: 2 large and fine clusters seedling oranges; 1 display citron of commerce. C. R. Workman, Lemon street: 1 cluster Eureka lemons, very fine; 1 cluster seedling oranges; 1 cluster Wolfskill's Best; 2 plates from the original tree Eureka lemon; seed imported from Hamburg, Germany, in 1872, only one seed growing, from which buds were put on orange stock. This is the famous Eureka lemon, named and introduced to the public and disseminated exclusively by Thomas A. Garey. Mr. Gilda, Macy street: 1 plate pear guava. Dr. M. McCarry, superb cluster of seedling oranges. I. W. Hooper: 3 plates seedling oranges; 1 plate Navel oranges; 1 plate Mediterrenean Sweet oranges. Geo. J. Dalton: 1 large fine cluster seedling oranges.

Orange—Joel B. Parker: 2 plates Mexican limes; 1 box Mexican limes; 1 box paper rind St. Michael oranges; 1 box Lisbon lemons. Dr. O. P. Chubb: 1 cluster Mediterranean Sweet oranges, season of 1884 85; 1 cluster season of 1885-86; 1 plate Mediterranean Sweet, season of 1883-84; 1 plate Mexican limes; 1 plate Washington Navel oranges.

Anaheim—Leonard Parker: 2 plates seedling oranges; 1 cluster Mediterranean Sweet oranges; 1 plate seedling lemons; 1 plate Lisbon lemons.

Pasadena—Dr. O. H. Congar: 1 box Lisbon lemons; specimens of Eureka lemons. Lyman Craig: 1 plate Eureka lemons: D. M. Graham: 1 plate of strawberry guava. M. Rosenbaum: 1 plate Sicily seedling lemons.

Crescenta Canada—Theodore Parker: 2 plates seedling oranges.

Downey—Robert Bedwell: 2 plates seedling oranges; 1 plate seedling lemons; 1 plate Mexican limes; 1 plate Tahi i oranges.

Alhambra—T. D. Kellogg: 1 plate guavas; 1 plate seedling oranges, season 1884. F. Edward Gray: 1 plate Chinese Mandarin oranges; 1 plate Mexican limes; 1 plate lemon guavas. A. C. Weeks: 1 plate Satruma Hill glove oranges; 1 cluster oranges; 1 plate seedling oranges; 1 plate Eureka lemons. G. B. Adams: 1 plate Chinese Mandarin; 1 plate seedling oranges; 1 cluster oranges; 1 plate Washington Navel oranges; 1 cluster Washington Navel oranges. R. T. Bishop: 1 plate seedling oranges; 1 plate Wash-

ington Navel oranges; 1 plate Eureka lemons. J. C. Byram: 1 plate seedling oranges, season 1884. S. B. Kingsley: 1 plate Washington Navel oranges; 1 cluster seedling oranges; 1 plate seedling lemons.

Duarte—W. P. Wright: 1 box Mexican limes. (These limes are of exceeding good quality, clean, bright and of large size.) 1 box Washington Navel oranges. A. Boddy: 1 plate lemons; 1 plate Hornet oranges; Wilson's best oranges; 1 cluster; 1 plate seedling lemons.

La Dow (south of Los Angeles)—1 plate seedling oranges produced without irrigation.

Glendale (north of Los Angeles)—2 plates Mexican limes, very fine, good quality; 1 box limes, 1 cluster oranges, seedlings, clean and bright.

Pomona—Rev. C. F. Loop: 1 plate Mexican limes, 3 plates seedling oranges, 1 plate all first-class lemons. H. G. Bennett—1 cluster Washington Navel oranges. James Smith—1 cluster seedling oranges, 1 plate seedling limes, 1 plate seedling lemons. S. Duton—1 plate Mediterranean sweet oranges, season of 1884. D. N. Graham—1 plate strawberry guava.

Santa Ana—3 plates seedling oranges, 3 clusters seedling oranges, 1 plate lemons, 1 cluster oranges from two-year-old tree. H. Goepper—1 bunch green dates.

Tustin—H. K. Snow: 1 plate Washington Navel oranges, 1 plate Thomas oranges, 1 plate seedling oranges, 2 plates Genoa lemons, 1 plate Eureka lemons, 2 plates seedling oranges, samples of seedlings, Washington Navel and Mediterranean sweet oranges, season of 1884. P. T. Adams—1 plate Mandarin oranges. A. Guy Smith—Box seedling oranges, picked when quite green, evened up nicely.

In closing this report we desire to state the phenomenal bright and clean appearance of the Los Angeles and vicinity citrus fruits. Los Angeles has earned the unenviable reputation of a "trade mark" caused by the black and unpresentable appearance of the fruit in many instances in the market.

The fruit on exhibition we find exceedingly clean and presentable in general appearance, comparing most favorably with the oranges from Duarte and other well-known first-class orange-growing sections of Southern California. Why this is so, can in a measure, at least, be accounted for by the increased vigilance of our orange-growers and the better and more thorough care of orange orchards induced by the advent of the scale bug here, and compulsory need of cleaning and caring for the orchards.

Respectfully submitted,

THOS. A. GAREY, Los Angeles,
JAMES BETTNER, Riverside,
G. M. GRAY Chico.

Report on Deciduous Fruits.

Mr. Sol. Runyon presented the report of committee on deciduous fruits, as follows:

We, your committee, beg leave to report that we have examined the display of deciduous fruit in Horticultural hall, believe that in merit it stands superior to any exhibit hitherto made in this locality, and highly creditable to the southern portion of the State. Many of the specimens exhibited were of unusual interest. We deem the display of White Winter Pearmain apples worthy of especial mention. The display from Downey were very fine in size. The following is the detailed report:

Downey—A. E. Davis: 3 plates White Winter Pearmain. J. P. Dickerson—1 plate Smith's Cider. Wm. Caruther—1 plate Ben Davis; 2 plates Roxbury Russet; 1 plate Baldwin; 1 Yellow Bellflower; 1 Yellow Newton Pippin; 2 plates Easter Buerre pear; unknown, 1 plate Kentucky Redstreak; 2 of mixed varieties; 1 Vicar of Wakefield. L. M. Grider—1 plate pound pear.

Ranchito—J. W. Cates: 1 plate Winesap; 1 Baldwin; 1 White Winter Pearmain; 1 Yellow Bellflower; 2 Yellow Newton Pippin. Pears—1 plate Doyenne d'Alencon; 1 Winter Nelis.

Compton—S. Rogers: 5 plates White Winter Pearmain; 4 Yellow Bellflower; 2 of Winter Nelis pears. John Ganes—2 plates White Winter Pearmain; 1 Yellow Bellflower; 1 Kentucky Redstreak; 1 Smith's Cider; 1 Yellow Newton Pippin; 1 Nickajack; 1 Lawyer; 1 Red Romanite. Isaac Wilson—1 plate Yellow Bellflower. Clinton Heath—2 plates White Winter Pearmain. E. D. Stone—1 plate Ben Davis; 1 White Winter Pearmain; 1 unknown variety.

Cerritos—C. B. Paris: 2 plates White Winter Pearmain; 2 N. Y. Pippin; 1 Roman Beauty; 1 Smith's Cider; 1 Nickajack; 1 Ben Davis; 1 R. I. Greening; 1 Willow Twig; 1 Shockley; 2 Winter Nelis pear.

Orange—Dr. Chubb: 1 plate Spitzenberg; 1 Ben Davis; 1 R. I. Greening; 1 White Winter Pearmain.

Duarte—A. Boddy: 1 plate White Winter Pearmain; 1 St. Petersburg; 2 unknown varieties.

Glendale—H. J. Crow: 3 plates Winter Nelis pears; 1 dozen Doyenne d'Alencon pears; 2 Easter Buerre.

Pomona—C. H. Loop: 1 plate blue pearmain; 1 N. Y. pippin; 1 Canada Rennette; 1 Spitzenberg; 1 Penn. Redstreak; 1 polo; 1 emperor.

La Dow—G. Howland: 1 plate Nickajacks; 3 Ben Davis; 2 Smith's cider; 2 W. W. Pearmain; 2 N. Y. pippin; 1 R. I. greening; 1 Winesap; 1 yel. Bellflower; 1 seedling.

National City—James Currier: 1 plate Winter Nelis pears.

Frank A. Kimball: 3 plates W. W. Pearmains; 3 yel. Bellflowers; 1 Baldwin; 1 Ben. Davis; 2 Winesap; 1 Nickajack; 1 Limbertwig; 1 Roxbury russet; 1 Lawyer; 1 R. I. greening; 2 N. Y. Pippin; 2 Red Jim, second crop; 1 seedling; 2 unknown; 2 Winter Nelis pears.

Tustin—Mr. Snow: 1 plate yel. Bellflower; 1 Smith's cider; 1 Winter Nelis pears; 1 Vicar of Wakefield; 1 unknown.

Santa Ana—Dr. Elmendorf; 3 plates Ben. Davis; 1 W. W. Pearmain. A. T. Armstrong: 1 plate W. W. Pearmain; 1 yel. Bellflower; 1 mixed variety; 1 Winter Nelis pears. F. A. Marks, 2 W. W. Pearmain; D. Holliday: 1 Ben. Davis; 1 W. W. Pearmain; 1 yel. Bellflower; 2 Vicar of Wakefield pears; Geo. Minter: 1 W. W. Pearmain; unknown; 2 plates Winter Nelis pears.

Newport—J. H. Moesser: 1 plate Kentucky Redstreaks; 1 Ben Davis; 1 White Winter Pearmain. Unknown—2 plates unknown; 1 Vicar of Wakefield; 1 pound pear.

Pasadena—Mr. Rosenbaum: 1 plate Winter Nelis pear. E. Millard: 1 plate White Winter Pearmain. O. S. Barber: 1 plate Roxbury Russet; 1 White Winter Pearmain; 1 unknown. James Smith: 1 plate Winter Nelis pear. Ed. L. Ferris: 1 plate December peach; one un-

known apple. W. T. Knight: 1 plate Genitan; 1 White Winter Pearmain; 1 Red June, second crop. A. C. Bristol: 1 plate White Winter Pearmain. Lyman Craig: 1 plate unknown variety apple. Walter Coolley: 1 plate Winter Nelis pear. Rev. Mosher: 1 plate Ben Davis; 1 White Winter Pearmain; 1 seedling.

Santa Barbara—Elwood Cooper: 1 plate King of Thompkins; 1 Roman Beauty; 1 Twenty Ounce; 1 Yellow Bellflower; 1 Yellow Newton Pippin; 1 Jonathan; 1 Fall Pippin; 1 W. W. Pearmain; 1 Golden Pippin.

Alhambra—S. B. Kingsley: 1 plate W. W. Pearmain; 1 Nickajack. F. E. Gray: 1 W. W. Pearmain; 1 Winter Nelis pear. R. F. Bishop —1 plate Beauty of Rome; 1 W. W. Pearmain. J. C. Byron—1 plate W. W. Pearmain.

Los Angeles—C. R. Workman: 2 plates W. W. Pearmain. W. B. McQuade—1 plate Fall Pippin; 4 plates Easter Buerre pears; 1 unknown pear. Geo. J. Dalton—2 plates W. W. Pearmain; 2 N. Y. Pippin; 1 Ben Davis; 1 Smith's Cider. John Hooper· 1 plate Nickajack; 1 W. W. Pearmain. Milton Thomas: 3 plates Smith's Cider; 3 Nickajack; 1 Tillequah; 2 W. W. Pearmain; 2 Yellow Bellflower; 1 Holland Pippin; 1 Ben Davis; 1 Rubicon; 2 California Keeper; 1 Dominic; 1 Lawyer; 1 Kentucky Red Stock; 1 Seek-No-Further; 1 R. I. Greening; 1 N. Y. Pippin; 1 Fall Queen; 1 Harrison.

Respectfully submitted,
SOL. RUNYON, Courtland.
S. MCKINLAY, Los Angeles.
C. E. WHITE, Pomona.
E. E. EDWARDS, Santa Ana.

Miscellaneous Fruits, Etc.

Mr. Wilcox presented report of the committee on miscellaneous fruits, as follows:

Mr. President, and Members of the Convention: Your committee to whom was referred the miscellaneous articles on exhibition, not included in the citrus family and green deciduous fruits, would report as follows:

That they have made such an examination as their limited time would permit, and that they find every product included in the exhibits possessing merit worthy of notice.

Grapes.—Among the grapes exhibited are those of Sam Brown, Tustin, Santa Ana valley. Like all the other grapes exhibited, they are of the second crop, but make a very creditable exhibit. The varieties are the Black Morocco, Cornichon and Victoria. The Black Morocco are very large, but not well colored. N. Nisson and G. W. Minter show a few varieties of grapes, embracing the Muscat, Large Mission, etc.

Wines.—Through the politeness of Prof. George Husmann, we copy from the partial report made by him to the U. S. Commissioner of Agriculture, relating to wines exhibited by J. H. Drummond, Dunfillan vineyard, Glen Ellen, Sonoma county, comprising the following varieties; Semillon—clear white, very fine, sprightly and high flavor; Pinot de Pernaud—a fine type of claret wine, rather light in color and body, but with a sprightly acid and fine flavor; Petit Sirrah—deeper in color, more tannin, more body, though not so delicate as the foregoing, a very fine claret; St. Macaire—softer than the preceding, deep in color, strong in tannin, more resembling the Burgundies than the foregoing; Gros Mancin—very fine, deep in color, but delicate and sprightly, fine flavor, a true claret of the highest type; Tannat—very fine, much like the foregoing, abundance of tannin and color, sprightly and full; Carbernet Sauvignon—very delicate and sprightly, fine flavor, but with more tannin than expected in this variety, yet, on the whole, the best of a very superior exhibit of wines of leading claret type.

Raisins.—We find the exhibits of raisins large and very choice, well put up and well cured generally. In the list we find those of R. J. Blee, packed by the Santa Ana Valley Fruit Company. London Layers, grown, cured and packed by H. D. Halladay, also from Santa Ana, are choice. The Muscat of Alexandria raisins, from H. K. Snow, Tustin, Santa Ana valley, are very large and fine. Mr. Snow shows some seedless Sultana raisins, well grown and well cured; also, some London Layers of very superior quality. McPherson Bros., of Orange, Los Angeles county, exhibit a large collection of raisins, of first quality and in fine condition. D. W. P. Chubb, of Orange, shows a box of raisins dried on the ground, taken from the sweat box. While they retain the bloom of the grape, they appear as if dried rather than cured. We do not refer specially to some small lots of this fruit, of more or less merit. C. Z. Culver, of Orange, Santa Ana valley, shows a small box package of very choice (London Layer) Muscat raisins, well cured, with the bloom perfect. The raisins are covered with tinfoil, and that is covered with oil paper, and would be an attractive package for the retail trade.

Figs.—The White Adriatic fig exhibited by Gustav Eisen of Fresno, appears to be a very superior variety. The fruit is shown in its natural, unbleached condition. It is large, and well cured and presents a very handsome appearance, being, in our judgment, equal, if not superior, to any fig ever imported into this State and supplies a long-felt want.

Dried Fruits.—The exhibits of dried fruits are light. The sun-dried French prunes of H. Goepper from Santa Ana, are very large, and under proper manipulation and packing would show well in any market. His apricots also appear to advantage. Mr. Goepper also exhibits a bottle of unfermented wine. It is clarified and shows well. Joel B. Parker, of Orange, shows evaporated apples and apricots, which we consider of best quality, though not possessing the best appearance alongside those packed for show.

Fruit Box.—There is also on exhibition a patent fruit box similar in construction to the common egg box used on the Pacific Coast, with the addition of paper sheets, perforated on the sides and top, so as to afford perfect ventilation. This box comes recommended by Parker Earle, President of the American Horticultural society. It is manufactured by Jenkins, McGuire & Co. of Baltimore, Md.

English Walnuts, etc.—Of three exhibits of English walnuts, the two varieties shown by Elwood Cooper, of Santa Barbara, are large, of good color, soft shell, plump, sweet kernel. The two samples of almonds of Mr. Cooper, are also good. Of the two varieties of chestnuts exhibited by Mr. Cooper the American variety is very large and fine. The walnuts exhibited by Geo. W. Ford, of Santa Ana, are of soft shell and very large. There are two samples of Italian chestnuts which are not worthy of any special mention.

Olive Oil.—The exhibit of olive oil of Elwood Cooper, needs no commendation from us, it having already acquired an enviable reputation in all markets where it has been introduced. A branch of the olive in fruit, is also exhibited by Mr. Cooper. We also report a jar of very large pickled Mission olives, put up in 1884, exhibited by P. Cazneau of San Fernando.

Flowers.—The bouquets of roses and other flowers, from Mrs. Maggie C. Rice, of Highland Park, are choice and quite attractive; also, a basket of flowers exhibited by Mrs. Rosenbaum, of Pasadena.

Corn and Vegetables.—There is a fine exhibit of white corn in the ear, made by Mr. Doyle. Also a watermelon of very large size and excellent quality, probably weighing 65 pounds, exhibited by D. Edson Smith, of Santa Ana. Mr. Smith has a flat ribbed squash of hard shell, marked 90 pounds; also shows another squash, of supposed mixed character, of much larger size, with shell not quite so

hard. Of the special value of these squashes, the committee makes no further report. There are several very large mangel wurzel beets, exhibited by Mr. Smith; also two varieties of sweet potatoes; the white Brazilian and red Bermuda, that are well grown. Also, by Elwood Cooper, a bunch of yellow Nansamoned sweet potatoes, very smooth and fine, illustrating the yield of that variety on the vine.

Orchard Whiffletree, etc.—A double and single whiffletree, with clevis and traces so attached as to be used in the orchard without injury to the trees, appears to be a good device, which bears patent date of 1883. There is also on exhibition a patent harness for use in the orchard, which does away with the whiffletree altogether. It consists of a steel yoke drawn up under the horses' body so as to closely connect the team, a broad band passing over the back to hold the yoke in its place. The contrivance is such, that the draft comes from a central point in the yoke. The horses are connected to the yoke by a short trace, and the claim is, that it can be used without injury to trees or vines.

Insecticides.—The exhibit of insecticides, by E. C. Niedt & Co., of Los Angeles, consisting of several kinds, is worthy of special notice.

Orchard Tools.—Dr. O. H. Congar, of Pasadena, exhibits his mortise and tenon grafting machine, which appears to be of practical value. W. B. Forsyth of Orange, exhibits a pruning-knife, the practical value of which is not known to the committee.

I. A. WILCOX,
A. T. HATCH, } Committee.
GEO. RICE,

Adoption of the Reports.

On motion it was ordered that these reports be received and placed on file and made part of the proceedings of the convention.

Mr. Grey: I will be glad to say something in regard to the steelyoke here exhibited. I am not advertising any interest, still I would like to have the fruit-growers have the machinery that can be used to the best advantage. You can use those especially in the vineyards, and anyone who has to cultivate cannot afford to be without them. We all know the difficulty of getting up close to the vines after they have gotten about two feet growth, but with that arrangement you can cultivate or plow very close to your vines and the horses do it with as great ease as they do in the old way, and the man with about one-half the exertion outside of walking. I think that everyone who has grapes to cultivate, or young trees, would find it to his advantage to procure one or more of these.

The chair announceed the topic for the afternoon:

Protection to Fruit Industry.

Mr. Aiken: I do not consider this subject a political question: it is simply a policy for the fruit growers to carry up. I have very fixed, decided opinions on the subject of "Protection." Protection has been the policy of the government of the United States from its conception; the first act of the first Congress in 1789, was an act imposing a tax upon importations for the purposes of revenue, and the protection and encouragement of the manufacturing interests have continued until the war of 1812 necessitated a tax upon importation that was almost prohibitory, almost 100 cents on the dollar. That led to a great deal of trouble with our shipping interests in New England, but that tax was enforced by the aid of such an eloquent advocate as John C. Calhoun, of North Carolina, and Henry Clay, of Kentucky, and was opposed by that eloquent statesman, Daniel Webster, of Massachusetts. However, there was in a few years a reduction in the tariff, until 1824, when there was a slight increase because Daniel Webster had from necessity been obliged to favor protection, as New England had become a manufacturing section of the country, and John C. Calhoun, finding that the Southern States would be necessarily producing States, and not manufacturing, turned in favor of free trade. This led to considerable discussion in this country, so that in 1832 there was a compromise by Henry Clay and Daniel Webster with Mr. Calhoun, and the tax was somewhat reduced, but the direct result of that reduction was a financial crisis in 1837, that for, we might say, the first time almost revolutionized the finances of the country. In 1842 there was a slight increase in the tax, and in 1846, under Mr. James K. Polk, at the commencement of the Mexican War, the tax on importations was further reduced in a manner looking to free trade. This continued for a series of years, until it led, as we believe, to that great financial crisis again in the year 1857 that nearly bankrupted not only our Government, but nearly every individual living in the United States. That was followed up to 1861 with almost a failure of resources on the part of the United States, so that in 1860, just prior to the war, no money could be borrowed by the United States Government, but the necessities of war led to the imposition of a tax for revenue upon importation, and under that tax we live substantially to-day. So when I assert that protection has been the policy of this country, I think history will bear me up, and when I assert, also, that the financial crises of this country have followed almost immediately, and as a natural consequence, upon the reduction in the tariff by the Government of the United States. I desire to leave that and point out, if possible, why it is policy for the producers of this country to seek protection. Our wool interests have stood in need, and have received the protection of this Government. Until within a few years there, of course, has been a great deal of prosperity growing out of the wool interests, but the reduction a few years since in the tariff upon wool has led to such an importation of Australian wool, also from other sections, especially South America, that it has almost made sheep-raising for wool impossible; and, my friend, the Hon. H. C. Wilson, of Red Bluff, although somewhat a free-trade man, would probably favor a tariff upon wool, so that his industry of raising sheep would be more profitable than it is

The prune industry to my mind, is one of the most important industries that we have. We send to Europe annually over $3,000,000 of our money to import the foreign prune. There is now and has been for many years levied upon the foreign prune a duty of 2 cts. per lb *ad valorem*, which is not sufficient owing to the cheap labor and the old orchards, and the methods of preparing that they have in Europe as against our young and growing orchards, and our want of knowledge and skill in the preparation of fruit; and I believe further that if our Government could levy a tax of 3 cents per pound it would be no more than is fair and just to this great and growing enterprise. If we did receive $3,000,000 of American money in California, in-

stead of sending it to Europe, and return to the East that value of fruit, how rich it would make our coast. We raise, to our mind, a better prune; we have a better climate; we can in time learn the methods and principles of preparing, grading and packing those prunes, so that we can fill the needs of the Eastern markets on the basis of the foreign fruits, but I submit that we should now have a protection of 3 cents a pound.

So far as the raisin is concerned, I believe that the raisin grower, owing to the fact that the cost of the raisin is substantially that of labor, which is expensive in this country, instead of two cents should have double, at least four cents protection. A few years since they had two and one-half cents, but that was changed. That little half-cent did not materially injure the country, but was a serious blow to our raisin growers, and if California is ever to be a profitable raisin State it should have a firm protection in view of the difference in the cost of labor.

The production of olive oil is one that could be developed into a great interest, but it must have protection. I cannot understand why any person desires the direct and oppressive competition with the old world as against the fruit industry on this coast. We have the best State in the Union, we have a climate and soil superior to any in the world, but unfortunately our people, though they are intelligent, industrious and useful citizens, cannot live on ten cents a day, and that is what foreign labor costs in those countries that we are brought directly in competition with.

Mr. Wilson: Let me interrupt you if you had a world for a market with free trade, don't you think it would be better for all the countries?

Mr. Aiken: If we had that, in a few years, allow me to state, that I think probably that China would supply the world with almost everything, and we would be reduced to the level of a Chinaman in this country. I must say that the policy of the strongest, the wealthiest and the best nations in the world has been protection for their interests and for their people. England is a very marked example of the idea of free trade, but I can say now that I think that the best minds in England and their best people are looking for the salvation of England through protection. Germany protects its interests; France protects its interests, and France is certainly a very rich and prosperous nation. The common people in England, the most of them are in trouble and very poor.

Mr. Wilson: It is the most prosperous nation on the globe.

Mr. Aiken: Yes, there is great financial force in England, but it is not with the common people. The common people of the French received after that great French revolution a little piece of land, maybe no larger than one to five acres, and they made themselves independent and rich through their industry, and the protection French law has thrown around it.

Mr. Wilson: Who pays the tariff? Isn't it the consumer, the poor man that does all the work and earns all the money? He pays every dollar of it.

Mr. Aiken: I would answer that by saying that the man who takes a protected prune pays his portion of the tax, but the money, the three-millions of money that is sent to these foreign nations, would be kept at home and would be of more value to the people than the whole tax that they pay for the protection. It is the encouragement of the industry. Now Mr. Wilson will admit that without protection the raisin industry or the prune industry could not flourish in this State, and we could not profitably make raisins.

I will make a motion that Congress be memorialized to fix a tariff upon foreign prunes of 3 cents a pound, and upon raisins of four cents a pound and a suitable tax upon olive oil, which latter is to my mind a very important industry, though still in its infancy, so that we can provide the world with an honest, fair and unadulterated olive oil, which we are unable to get from Europe at any price. If that resolution be passed I believe that the Congress of the United States at the present time has a large majority in favor of protection and we can secure the desired result.

Mr. Shinn: I think this is entirely out of order as a general question of political economy. I think this convention should confine itself to the consideration simply of whether it is to the interest of the California fruit-growers that there should be an additional tax upon prunes, raisins and olive oil.

Mr. Wilson: There was an old neighbor of mine, by the name of Nesmith, said to me, Why not favor a protective tariff? You know you get a less price for your wool without it. I said that is just the difference between me and you. I am in the sheep business, and I continue it because I want no rights that I would not accord to my humblest neighbor; I want no rights legislated to me, because to legislate from one man's pocket into another's is wrong.

Mr. Hatch: I move that it is the sense of this convention that the various fruit industries of this State need a protective tariff. Seconded.

Mr. Webb: I move to amend that by substituting for the words "protective tariff," that our Senators and representatives in Congress be requested and instructed to pass and procure such legislation as may advance the interests of the fruit-growers and producers of California, and I will explain the reasons for so moving to amend. In the first place, there is certain other legislation which is proposed to be enacted that will be very injurious to the fruit interests of this State, especially the southern portion of it. If that Mexican "Reciprocity Treaty" is finally ratified and goes into effect, there will be an opposition to Southern California fruit, and you cannot tell where it will extend to; it is more formidable than you have any idea of. It is no use to ignore the fact that Mexico can produce a very fine orange. What does that "Mexican Treaty" provide? It provides that in consideration of the privileges to the producers and manufacturers of coal, iron, steel and petroleum, to ship into that country all their products and their manufactured articles free of duty, and that in consideration of that great privilege that has been extended to that class of enterprises, that the United States will grant Mexico the privilege of sending into the United States limes or lemons or oranges, grapes, raisins, figs or wine, in fact, everything that is produced in the soil, which will come in direct competition with our products. I think, therefore, that it

is necessary to cover the whole ground, which I believe the amendment offered by me will do.

Mr. Bettner: I will rise to second Colonel Webb's amendment. If Congress should give us a duty of 20 cents a pound on raisins, it would be of no use to us if they should then put the "Mexican Treaty" into effect.

Mr. Hatch withdrew his motion in favor of the substitute, and Mr. Aiken withdrew his motion for a commitee of three.

Dr. Congar: In view of the fact that we import two or three million boxes of raisins from the old country, whereas we only produce two or three hundred thousand boxes, while I am a protectionist, it seems so me very unjust to the forty-eight or fifty millions of people to oblige them to pay this extra tax because we are not organized or old enough to do this work as cheaply as we ought; and while we can produce only two or three hundred thousand boxes Congress will notice no such proposition. You can put it in gold letters that they will not adopt any such unjust measure. We have got to correct the method of producing these things. Generation after generation have come and gone in Europe before they got down to this methodical, mechanical and close way of handling their fruits. They handle one or two acres, and here we are anxions to handle a thousand. We will fail, because we are undertaking to do too much.

Mr. Hatch: I would like to ask one question of Dr. Congar. How long does he suppose it would be, with a "protective tariff" of four cents a pound, before California could supply all these articles.

Dr. Congar: I will say this: the principle of Government and the present sentiment of the people is against the protection of the rich or a monopoly, especially at the expense of the poverty-stricken portion of the country. On that grand principle, Congress will not do anything for us. I will not answer directly the gentleman's question, because it would require some considerable explanation, but I say on general principles, our Government would not listen to a proposition of that kind where millions are expecting these imported goods.

Mr. Aiken moved as an amendment that a committee of five be appointed by the chair to report a memorial to Congress in favor of our fruit interests, such report to be made the next morning. Carried.

The chair appoints Mr. W. H. Aiken, Dr. Congar, Dr. Chubb, Mr. Bettner and W. H. Workman.

On motion of Mr. Hatch, it is resolved that the subject of " The cultivation and pruning of fruit trees " be discussed at the evening session.

Pruning the Orange.

Dr. Congar: I wish to say a few words before I have to go home, about the " pruning of the orange tree." I discovered something a while ago which was new to me at the time, that the orange tree especially, and the lemon also, project their wood in the form of threes ; that there are three branches that start off from a given point about the same time, and under favorable circumstances the tendency of the tree is to grow rapidly in a horizontal direction rather than to shoot up. I found that in pruning the tree in a careless way, or by a careless hand, that it would grow unevenly, first one side and then the other, and also, that on the northern side of the tree it grew much more rapidly than upon the southern exposure. That is another proposition which I might discuss, but I will drop that for the time being. I found also that the fruit was on the lateral branches of this triple growth, it was on the outside sprigs. Not being familiar with the terms that are used by experts, I give it to you in my plain language. There is the center shoot, and then there will be three more start out, the center one continuing, and two laterals and so on, until you have to cut back very materially in order to get into your tree and keep it uniform in shape. I therefore commence to cut away the central, the wood growing stems, to prevent it becoming too large and thereby I would preserve the fruit-growing limbs and keep my tree in a symmetrical form and govern the growth by that system of pruning, whereas a hand not accustomed to that and not understanding it would grow up a tree and cut it off wherever he chose, or where it was most convenient to get in to use his knife, and you will observe it would be at the expense of the fruit producing branches if it was pruned in that way. So I find it is a very essential point for our orange-growers to understand, and I think if they look at their trees a moment they will find that I am substantially correct. They will find if there is any fruit, it will be on those laterals almost invariably, and the center, as I say, would be the wood-producing stem or limb. Now, the reason why the wood grows more rapidly on the northern exposure, to my mind, is in consequence of this shade. The heat of the sun in this portion of the State is so great, particularly upon the southern exposure, that the flow of the sap must necessarily be impeded, and the fruit upon the southern exposure smaller than it is on the northern exposure; hence the necessity of cutting more wood away upon the northern exposure than on the southern. Those things we cannot have disregarded by our hired help except at our expense.

Addresses for the Next Convention.

On motion it is resolved that the following gentlemen be requested to prepare papers to present to the next annual convention on the following subjects:

Dr. O. B. Congar on the subject of the "Pruning of the Citrus Fruit;" Mr. J. Shinn, on the "Apple;" W. W. Smith, of Vacaville, on the "Peach;" F. C. DeLong, of Marine, on the "Foreign Shipment of Apples;" Mr. A. T. Hatch, on the "Almond;" Mr. I. A. Wilcox, of Santa Clara, on the "Strawberry and all Small Fruits, except the Currant;" Mr. Elwood Cooper, on the "Olive, the Manufacture of Olive Oil and the Walnut;" W. H. Aiken, of Santa Cruz mountains on the "French Prune;" James Bettner, of Riverside, on the "Production of the Orange and the Various Kinds;" Robert McPherson, of McPherson Bros., on the "Raisin;" Prof. Husmann, of Napa, on the "Quince and the Best Shipping Grapes;" G. N. Milco, of Stockton, on the "Cultivation and Preparation for Market of the Fig;" Mr. Chas. W. Reed, of Sacramento, on the "Best Shipping Fruits, Aside from the Grape;" Mr. Geo. M. Grey, of Chico, on the "Pear and the Cherry;" Dr. Kimball, of Alameda county, on the "Apricot;" W. M. Williams, of Fresno, on the "Nectarine;" H. P. Livermore, of San Francisco, on the "Market and the Marketing

for the current year;" A. F. Coronel, the commissioner of the Los Angeles district, on the "White Scale, the *Icerya purchasi*;" Mr. W. S. Chapman of San Gabriel, on the "Shipping of Lemons;" John Rock, of San Jose, on "Nursery Stock;" Dr. S. R. Chandler, of Yuba City, on the "Planting and Pruning of deciduous fruit trees;" H. W. Meek, of San Lorenzo, on the "Plum;" Gen. John Bidwell, of Chico, on the "History of Fruit Culture in California;" Dr. H. W. Harkness, on "Fungoid Diseases;" Frank Kimball, on the "Pickling of Olives;" J. A. Day, of Ventura county, on the "Apricot and Drying of the Same, and Packing it for Market;" T. J. Swain, of San Diego, on the "Guava;" Hon. Geo. Stoneman, on the "Pomegranate;" J. M. Hixson, on the "Pieplant and Early Shipping Vegetables."

Mr. I. A. Wilcox, of Santa Clara, offers the following resolution, which, on motion, is adopted:

WHEREAS, The reports of general produce markets sent out by the Asscoiated Press are of great value to producers and to the general public. Therefore, be it resolved, that the manager of the Associated Press be requested to give his attention to the gathering and transaction of such reports relating to the markets for California green and dried fruits, and thus confer a great benefit upon the fruit industry and business interests generally.

The convention adjourned until evening at the usual hour.

Cultivation and Pruning.

At the afternoon session on Friday the chair announced the topic, "The Cultivation and Pruning, and the Time to Prune Fruit Trees."

Mr. Garey: I would like to make a few remarks in regard to the theories advanced by Dr. Congar to-day as to the best method of pruning orange and lemon trees, the orange especially. The doctor's particular point in regard to pruning the orange tree was, that he had discovered that the twigs of the tree or the limb grows in triplets; that is, as the limb grows out there are three branches, one straight branch and one on either side, and that he has found by investigation that the two side branches are the fruit-bearing branches, and that the leading branch is the wood branch. Now, I would like to know if any other orange-grower knows anything about that. I have never noticed it, and I think that my experience in that matter would not bear out that theory. I believe that the leading limb is as liable to have fruit upon it as the side branches; however, I wouldn't be quite certain about it, for I have not noticed it very particularly. But I tell you where I believe that pruning would be bad if followed up systematically, as he suggests. If at the commencement of the bearing of the orange tree the process was commenced, and the plan carried out, your orange tree in a few years would amount practically almost to a hedge. It would present pretty much the same appearance that a cypress hedge has when pruned continuously, and would throw out small branches until it became almost compact. I have an idea that it would have a tendency to thicken up too much, and the main object in the pruning of the orange tree is to thin out the branches on the inside, in order to admit all the air and sunlight that is possible. You can't do it too much; the orange tree bears altogether on the outside of the tree. Whether they bear just on these side branches or not, I am not prepared to say, but it certainly is on the outside. When you walk under a tree you will see but very little fruit, but on the outside the tree will be a mass of fruit.

In the pruning of the orange tree, as I said in my essay, there are two systems followed in this country, one called lower pruning and the other called higher pruning. Some allow their orange trees to grow from the ground, don't raise them at all, and scarcely ever thin them out; others raise them gradually, from year to year, until a horse can be driven under the limbs, in order to cultivate them close around the trunk, and I believe it is generally considered that that is the best, but there is a great diversity of opinion on this matter, and a great many ways of doing it. One thing is certain: we must prune our orange trees in such a manner that we can get at them pretty easily and thin them out pretty well, because if they are not, when the black scale or other scales make their appearance, we cannot get rid of it at all. You must have it very open and thin, then if you wish to spray, it is an easy job to clean the tree easily, and the tree has a tendency to clean itself.

Dr. Lotspeitch: I can speak of the orange tree when I cannot speak of any other kind of trees. The best plan to make a tree, is to commence in the nursery. When the young tree is there it should be formed but a little at the lower portion. It forms in the shape of a tree after awhile, and when it is taken from the nursery it should be set out as well as you can possibly put it in the ground. My idea and practice has been this: to wet the ground thoroughly in the nursery, take the tree up when the ground is thoroughly soaked with water, that will give you a tap-root perhaps four or five feet long. Well, a man will say, I can't dig a hole four or five feet long to put the tap-root in, so cut it off. I say no; never cut it off. An orange tree two years old has good lateral roots also, and they can all be pulled out of this soft muddy earth. To dig the hole so as to lay out all these roots would be an everlasting task, but you can take a crowbar and make a hole a few feet deep for the tap-root, and you can also make your holes on either side to receive those lateral roots. Put them in in that way, then set the tree and cover it in with soil and run water immediately around it. Cultivate it well for the first season, run the water very closely to it, then trim it but very slightly, never cut back very much of the outside limbs. The second year you trim it a little higher, and little by little, year after year, go up; never trim to a bushy top; leaving the lateral limbs touching the ground almost, but always keep them just off the ground, so as to keep insects from crawling up on the branches. In the course of six or seven years, perhaps, you would have the trunk of the tree two feet or so, and the limbs would be eighteen inches, perhaps, from the ground. Never let an orange tree or any other tree grow too high, if you can prevent it, without injuring the growth of the tree. Keep it pruned out carefully, the outside of the tree and inside. Make your ditches so that you can run water within three feet of the tree—that is close enough to run water around an orange tree, and have your machinery so rigged that your horses can walk between the trees up

here and the furrow will be under the tree. By low training you have your fruit so that you can stand on the ground and pick it all around, instead of having ladders twenty five feet long to go up on the tree, or have a distance of five or ten feet from the ground before you get an orange. That is my opinion; still there may be better ways of cultivating a tree. But a tree that is not trimmed up to make a high tree, will make a heavier stock and a better bush than the tree that is trimmed up, and the fruit that is grown on it grows just as good and better than that which is grown on top, because the wind is not slashing it around and scratching the oranges and making them unfit for market. Those that are near the ground are as fine oranges as we ever find.

Mr. Garey: How do you cultivate the tree for the six or seven years?

Dr. Lotspeitch: We take a Buckeye sulky plow and we have a seven-foot cultivator, that we call a "tarantula cultivator," and we attach that to the Buckeye sulky and ride along and cultivate. You can go along on one side, cultivating clear up under the tree. You can run it right up against the tree, if you wish to run that close. That is the way we cultivate under the tree, and we have trees that are ten or fifteen feet across.

Mr. Garey: How do you get rid of the gophers?

Dr. Lotspeitch: You could not have found a gopher among our trees in two years.

Mr. Garey: How do you get to spray the tree under these circumstances?

Dr. Lotspeitch: I use a No. 1 Hooker pump and I have a 4½-foot lever on it, and 50 feet of hose, and I puncture a slit in the disk that I put on the San Jose sprayer. The hole I puncture is oblong, about the same as you could put the point of a pin in. Then we put two men in the wagon with a tank and they work the pump in the wagon. The pumpers will pump seven to eight hundred gallons of water through these two sprays in a day. I have on the end of our hose 10 feet of one-half inch iron pipe; the nozzle is on the end of and then we commence; and if we want to spray a tree of the kind you speak of we just get right down underneath, on our knees, and we go through the inside carefully and we take it all around, running it from one side to the other, and we pass up, out and around that tree. I have the greasiest suit of clothes you ever saw in your life; that is what I wear when I spray, and I spray every year. I sprayed this year three times in parts of my orchard, and I have watched it and been with every tank that goes into the field. That is the way a man has to do if he sprays thoroughly, and that is the way I have sprayed our trees. It is a very nice job when it is well done.

Mr. Cooper: About how many gallons to the tree do you use?

Dr. Lotspeitch: I can answer that; a seven-year-old orange that is grown well of the Mediterranean Sweet variety, will take 6½ gallons to a tree; a seedling tree of the same age, well grown, takes 15 gallons; you can take a Rio tree that is not quite so large, and it takes a little less.

Mr. Garey: How many of the Rio variety have you?

Dr. Lotspeitch: About 500 Rios.

Mr. Garey: How do they differ from the Mediterranean Sweet?

Dr. Lotspeitch: Just about as a black oak tree would differ from a white oak tree. There is a very different appearance of the limbs; they grow out differently. The orange is very similar to the Mediterranean Sweet, but the difference is in the growth of the trees. They are more rapid growers; they are not bushy trees; they throw out young lateral limbs and they will thrust out a sprout when they are growing, and from four to six right at the end of it. The Mediterranean Sweets will never do it—just like the seedling oranges.

Dr. Kimball: I hardly feel myself competent to say anything in regard to the orange question, but at the same time I ought to have an opinion about it. In 1871 I sent to the Islands and obtained several crates of oranges that were picked ripe, for purposes of getting the perfected seed in order to start an orange nursery in Alameda county. I had been previously down in this county two or three years before, and thought very favorably of orange culture. I raised trees from my seed and after they got to be about two feet high I took them out of the ground and transplanted them, cutting off the tap root and set them out in nursery rows. When they were about four years old I budded quite a large number of them with the Acapulco and some few with the Navel orange that I obtained from Washington, D. C., and when I got ready to transplant them, as they were quite large, vigorous trees, I had a ditch dug between every other row and a spade run under each tree, cutting off the tap root, and I ascertained from the way that they acted in the future that it was an important thing to follow out the natural inclination of the tree. They were bound to have a tap root, and where I cut the tap root off there immediately started down two or three more; they were bound to go down. In trimming them up, I have observed particularly what agrees with Dr. Congar's theory of the growth of the orange. I noticed that when I cut out the center branch the effect is to stimulate the development of the fruit buds on the other branches, because to a certain extent it checks the growth of the tree; and I have been struck with the peculiar difference of the orange tree from any other tree in regard to this development, partly on one side and partly on the other. It has been one of the greatest studies that I have had, how to prune the orange tree, and I don't know that I have decided on a positive plan yet.

But, in regard to deciduous trees, to change the question, most all of our deciduous fruit trees put out a spring growth. We have two growths in Alameda county, the spring growth and the September growth. The first growth is the direct growth and central growth, and afterward the side growths come in, the lateral branches, and if you cut off the central branch then you abnormally develop the others, and it seems to me that nature's way is the best way, that it is the only true way that we should follow, and that is to cut them all back when we trim and leave the central one a little in advance of the others, to let every lateral branch of the tree in a certain sense be a main branch by itself. I do not wish to be misunderstood, because in every tree there is a main branch in the center, the standard, but there are always these other branches, and the proper way to trim, the way that suits me the

best and that I have the best success with in all the trees that I plant (and I cultivate almonds, apricots, peaches, pears, plums and cherries), is to follow out that plan of nature's and when you trim leave the central branch a little the longest. Don't cut it out, because nature is bound to go ahead, and instead of having one center branch you have a bunch of laterals of which each one tries to be the center, and the result will be that your tree will be too bushy, too broomy. I do not put myself in the position of instructor about pruning or trimming, because I believe that the intelligent man is governed by the circumstances and conditions of trees that he is working up, and that he will vary according to the circumstances. I don't think there is any iron-clad law that can be laid down in trimming trees. I see the best results in growing all kinds of fruits by all classes of men by thinning out their trees, but I think, in the main, that nature's way is the true way and that we should never cut out, never exterminate the center but leave it a little in advance of the others and cut back the center only in proportion as we cut back the laterals.

On motion it was agreed that in the discussion on pruning and culture of trees there be considered, first, the apricot, second, the apple, third, the pear, fourth, the peach, fifth, prunes and plums; that in the discussion 20 minutes be devoted to each subject and each speaker be limited to five minutes.

THE APRICOT.

J. D. Parker, of Orange: The apricot with us grows much as it does with you in the North, and from my experience, and what I have read and heard, I find that the tree has a tendency to branch out too much and I go and give it a summer pruning about the last of May, as a rule. I give it a fall pruning also, and I cut back within ten inches of the old growth; that is, on the last ten inches of the new growth on each tree. The result was that I got my tree in a very compact head, and last fall I thinned it out thoroughly and my trees blossomed finely. I had a heavy crop for the age of the trees—that is, it would be so considered with us. I had about 50 tons on the orchard, and trees that were not pruned through the valley, a great many of them, did not begin to bear any such crop. Some did well where they were pruned once a year, but my observation goes to show that the summer pruning had a great tendency to make the fruit earlier, though it might have the effect to dwarf the tree in the future. If there is any one here who has had any experience of the bad effect of summer pruning I would be glad to hear from him.

Dr. Kimball: I have a small apricot orchard, some of it for perhaps 12 to 15 years, and in a good year I have from 100 to 140 tons. I think, in regard to pruning the apricot tree, the old saying will properly apply: "He who spares the rod spoils the child." I think it is necessary to use the knife freely on the apricot tree, first in getting it into proper shape, and you all know that it is a tree which is particularly inclined to overbear, the consequence of which is a large quantity of small, inferior fruit that you cannot sell to canners at all, and which takes a longer time to prepare for drying. In raising apricot trees, if you receive the trees from the nursery, yearlings or two years old, I think that they should be trimmed severely for about three years to place them in a condition so that they will not split down, for I believe that of all the trees that we rear in the central part of the State, and perhaps here, that the apricot is more inclined to split down and be broken by the wind, and be broken by its weight of fruit, than any other tree that we raise. I have had some trees that I think produce from 700 to 1100 pounds of apricots in a year, and they are not headed at all; or, I might say, headed in a group, two or three limbs divided right together. In first forming a tree, if you let three buds come out together and reach out in different ways, when the trees bear heavily they will split down. The tree should be shaped, if possible, so as to have one leader, one center, and they should be trimmed to come out, not at a point of junction, but two or three or four inches above or below, and you have a symmetrical tree, and without danger of breaking down in that way. As I have said before, it is necessary, in order to get the best results, to thin out thoroughly. I always leave these lateral branches from the central branch that forms the head of the tree, one coming out on the east, one on the west, one on the north and one on the south; trim them similarly as you do the center, and you have then a symmetrical tree. Of course, the apricot tree should be severely cut, because if you let the tree fruit, and if you trim it too close, hedge-like form, you will have a large quantity of fruit of an inferior quality. But if you cut back to the three lateral branches, besides the main center, keep it thoroughly thinned out, and when you cut off the ends of the limbs of a year's growth do not let it be too broomy, by that way you save the process of going through your trees and thinning them so much, for in our section of the country we not only have to trim our trees sharply, but go through and pull off the fruit.

Mr. Milco: A friend of mine in Stanislaus county has a little orchard of five acres and about three years ago I was visiting him, and looking at his orange and almond trees. They had made a wonderful growth, great fine trees, but no fruit on them. He wanted to know how it was possible to make those trees bear. I asked him what he was doing to them, and he said he gave them all the water they needed. I told him to go to work and root prune them. About eight feet from the trees dig down all around and cut off all the roots and see what that would do. The result is that he is having the trees loaded down with bunches of beautiful looking oranges. I was over there about three months ago, and it was a delightful thing to see those trees bear. In my judgment the best time to root prune is during the rainy season, say in January or February. In pruning apricots on our place, and we have something like 40 acres of young trees, we find that when they are severely pruned there is much gum on them and I believe that severe pruning has caused it. However, our trees are young and we cannot tell whether that is the cause or not.

A Delegate: I would ask Dr. Kimball if he believes in summer pruning of the apricot?

Dr. Kimball: If there is danger of the tree growing so fast as to grow very much out of shape, as apricots sometimes do, I would use the knife to put it in shape. The apricot is the

most wonderful grower I think, of any tree we have. If I find its limbs commence growing down instead of growing up, I would cut those off, but we do most of our pruning in winter.

Mr. Bettner: Summer pruning of the apricot is done very largely at Riverside. It is the universal practice there of all the apricot-growers to cut back the trees in summer, directly after the crop is picked; some also prune in winter additionally, but not all of them. The main pruning is done in the summer time, after the crop is gathered; that is the result of the experience there for a number of years.

Ira F. White, of Vacaville: The same custom is pursued in Vacaville. We deem it an advantage to the tree and to the fruit the next year to summer prune.

Mr. Shinn: There is something more to be done in the way of pruning the apricot. It has such a tendency to split down the limbs. If you notice any young orchard of apricots, you will probably find that the first year they are planted out they do pretty well. The next year, if you let them alone, with no effort to check them much, they make a most tremendous growth, perhaps greater than any other tree we have. If they be planted just as you get them from the nursery, a considerable number of them will split to pieces and be greatly damaged. That could be avoided almost entirely by making a proper selection of the tree when you plant it. Do not buy trees that do not have single stem with strong, nearly horizontal laterals. If you do that you will have no trouble about it. I think the apricot should be pruned almost the same as any other tree the first year. It should be pruned with reference to its symmetrical and proper shape. When it comes to be a tree, if you find it is going to split, and you can find it out easily enough by the looks of the tree, where the crotches are pointed, cut off one limb or cut it back. I never summer prune apricot, except for the purpose of avoiding that splitting. They will bear enough without summer pruning in all cases I know anything about.

J. Begg: I have understood from remarks made here that pruning is haphazard business. It is nothing of the kind; it is thoroughly a scientific business, and there is a proper way to prune every variety of fruit. I will say in reference to the apricot, that the gentlemen are all right and all wrong. It is right to prune the apricot in summer to a small extent, but then again, if you prune it severely and prune the larger limbs, it is necessary to defer the pruning until winter, and then you thin out the bigger limbs of the apricot. That is the proper and judicious way to prune the apricot. The apricot is generally allowed to have the branches too thick; it is the universal fault in California, not only with the apricot, but every variety of deciduous trees; they leave two-thirds too many branches on the trees. The suggestion I would give, as how to prune the apricot, would be to head it back in summer and then prune out the bigger branches in winter.

Mr. Wilcox: So far as pruning the apricot, my general rule is like this: If the tree has made a very vigorous growth, I will cut it off any time in the year; but if it has made a short growth I would not check its growth: I would leave that to winter; this rule applies to all pruning so far as I know.

I. H. Thomas: To prevent splitting I bore a hole and put a bolt in and screw it up tight. It will do you no injury, that is, after I have got a large tree.

Mr. Garey: Down here, from our experience with apricots, the trees have a tendency to be shy bearers; they are shy bearers as a rule. Some varieties like the Moorpark, it is almost impossible to get to bear under any circumstances. It is unlike some other varieties which are pretty fair bearers if we prune them in summer. I see by the remarks here that the tendency of the apricot at the North is to overbear; that is not the case with us; the trouble is to get them to bear. We have to aid them by summer pruning.

Mr. Begg: I do not think it is a good idea to put the summer pruning off too late. I notice in Fresno county some have put off the apricot pruning too late. They have a system of summer pruning by heading it off a little, and the trees make a growth of two or three inches between that and fall and some of them being tender, the first frost coming in the fall nips them. I think if summer pruning is practiced it should be done early, about the time you take the fruit off. If the tree is not in fruitage whenever you have got a growth of 18 inches in the spring of the year, then summer prune, because if you wait until the next year you will do that any how and then you will advance the tree very near a year on the young tree before it commences to bear.

Mr. Wilcox: Summer pruning, or anything that checks the flow of sap, tends to produce fruit, whether it is root pruning or tying the limbs down, or summer pruning; and no tree will fruit when it is growing very vigorously.

THE APPLE.

W. H. Aiken: I am a little interested in this subject, still I don't know much about it, although I have made a study of it for about ten years. In the first place, I don't believe in this high trimming of an apple tree. I believe in low trimming for the purpose of protecting the bark from the sun, and for the purpose of being able to get at your trees to prune and to pick your fruit. It will make a handsomer tree; it will bear more fruit and will be healthier, because the lower limbs throw a good deal of sap, and I notice the apples on the lower limbs are large and fine. I know in a block of Yellow Newtown Pippin trees, I put them out and cut them back pretty low and they came out well and are very handsome three-year-old trees now. I built them out with limbs on each side, pruned them back next year so as to strengthen the limbs, strengthen the elbow, and endeavor to get limbs enough on to make a good tree. The Newtown Pippin has a small leaf. We have to put a good many limbs into it, for the reason that it is a very upright grower and has to have the leaves to shade its fruit, and we find that although it may appear too thick, when it bears it opens up and makes a very healthy, prosperous tree. It has bearing strength; the limbs do not come down, they have been pruned back so that they have grown large and strong from the limb, or the elbow, and hold the fruit up. I have tried the method of allowing the tree to grow without any pruning at all. With the Newtown Pippin it is fatal, for the reason the tree will throw up one, two or three limbs, and they will keep growing up in the air without lateral branches,

and the apples will be burned by the sun, and I have never been able in that way to raise apples of good form, size or color. Some other apples, like the Baldwin, are very strong, healthy, large-growing trees, and that, of course, needs some pruning, although not so much as the Newtown Pippin. It is a very good tree, and the apple is a very good apple. The Pearmain apple that I have noticed here, I have no doubt must grow on strong, well-formed trees, for the reason that one of these Pearmain apples on the far end of a long limb would break it. The great point in apple raising is to make a strong, well-developed tree with bearing strength and bearing space, and then thin the apples so that they will grow in marketable form, size and color. I don't think that some of those large apples that you have here are exactly marketable. If many of them were one-half as large they would undoubtedly bring more money. It is not necessary to raise abnormally large fruit; the main object is to raise an ordinary fair-sized lot of fruit. That is my opinion in regard to apples, and there is no difficulty in doing it, because if they tend to grow too large you can allow more to grow upon the tree and they will come down in size.

Mr. Wilcox: The Yellow Newtown Pippin has about three branches that grow very near together when they start, and in order to make a good tree after they get up a ways, you must prune off the buds that start out all around all the time, for they encroach upon each other. That rule does not apply to all apples; the White Winter Pearmain I never prune at all. If you let run it has a healthy body, and if you cut off the ends of the limbs you lose the fruit. The Baldwin don't need much trimming with me, and yet with some soils they grow heavier than they do in others. The Northern Spy, which was a great favorite apple in New York, became a favorite of mine, and I planted a great many a number of years ago, before we had the railroad, and I became disgusted with the fruit business, and cut them down and put out small fruit. I am turning around now and planting trees. I believe that no general fixed rule can be given, but the man who is observing looks at his tree and its buds will find what it needs to secure the best results.

Mr. Berry: I will state that very few people in this country prune the Pearmain at all; they let it grow.

A Delegate: Do you prune any of your apple trees?

Mr. Berry: Not very much, but I know the Pearmains are not pruned unless a sucker grows up. They may be taken off, but many growers do not even do that.

Mr. Bettner: It won't do to cut the trees off. If you do you won't get any tree at all. Some strong varieties may be improved by cutting them back; others it would not do at all. This is especially the case in the interior valleys, where it is warmer than on the coast. The result of it is, if you winter prune trees the sap seems to be checked, and that limb amounts to nothing. On my own place I simply practice thinning out. If the tree grows too bushy and throws too much shade, I simply thin out. I do not cut back the apple at all.

Mr. Wilcox: An apple tree, like any other tree, has the body above ground, and corresponding with that below, and, like any other tree, if it strikes hardpan it don't throw out much top, and does not need much pruning. As a general rule, that tree that grows very full will grow deep.

Mr. Stone, of Compton: I have had some little experience in farming here. I took the trees when they were two years old and set them out and trimmed the trunk up about four and one-half feet high, and then the next year, when the limbs grew out, I cut them back, so as to cause the big stout limbs to form the top, and the inside was pretty well cleaned out. In that way I have got trees reaching out in this way [showing], and I can drive a small horse below the tree to cultivate, and cultivate right up, with a "V" harrow, if necessary. This is the kind of fruit I grow [showing a very large apple]. It is not like that on all the trees, but it is on those trees that have not been bearing much. I have not cut the tops off very much after they got to be three years old, after they were set out, which, with two years in the nursery, makes them five-year-old trees. By that time that I have got the tree in shape, but as they are now I have had on some of those trees, perhaps 15 props to hold up the fruit. I grow apples, such as that on trees perhaps 25 feet high—as pretty shaped trees as can possibly be seen.

Mr. Milton Thomas: I wish to say in reply to Mr. Aiken that around Los Angeles we prune our apple trees regularly and systematically. I have had some experience, and claim to have planted more apple trees than any man in Southern California, and have raised as many apples and had a wider experience; and I say that we prune regularly and prune systematically, so much so that in my orchard we have many loads of brush to haul every year or two. I do not see how a man can raise apples without pruning his trees systematically and pruning them vigorously. Of course, the White Winter Pearmain is the best apple that we raise here. We do not prune it as much as other trees because it does not require it. The fruit usually is borne close to the limbs and branches of the tree, and not on the ends of the limbs as in some other varieties. In planting out an orchard I plant out one-year-old trees—five or six feet high, say, when I plant them, and cut them off to—say four or three and one-half feet—and then I allow a head to commence, and rub off all the branches that come out below two feet. Then I have those lateral branches extending out—just as many as I want—and there will not be those crotches or forks. There will be lateral branches, and there is not much danger of those breaking. The next year I prune back some of those branches—all of them some—and every year, till they get to bearing, prune some off, so that I have a branch large enough and stocky enough to bear fruit. I think we should prune apples; and I know around Los Angeles there are hundreds—I might almost say thousands—of loads hauled off our orchard and given to Chinamen for fuel, or burned up.

Mr. Begg: Are any of the apple orchards in the southern part of the State affected in this way: eighteen or twenty inches of the ends of the limbs refusing to leaf out with perfect leaves, and the following season the limb dies down to where the healthy limb would put out? We have that disease in some orchards

through the valley. The limbs have been placed under a strong magnifying glass; there is no insect on them. For 18 or 20 inches on the top of the tree it will be, probably, a half-sized leaf during the season, and the following season it will die back about 18 inches, and at the point where it dies a healthy sprout will start out and grow up and make a terminal leaf.

A Delegate: I believe that is owing to the soil. Here in this portion of Los Angeles county some are troubled very much with alkali, and sometimes the trees will grow that way—that is the only way I can account for it.

Mr. Gray: At Chico we are troubled something that way, with the limbs not coming out fully. I noticed especially a young orchard three years old. Last summer there was a few scattering trees that sometimes would have the whole top of the tree affected, and other times on one side the leaves would be full sized, good, strong, healthy leaves and the other half of the tree about half size, and I know it will die next year. I thought it was probably alkali: that was my opinion of it, but I examined very closely, thinking it might be some insect at work either on the limb or on the tree, but I could not find it there.

Mr. Begg: I experimented on one tree. There was no alkali soil where it was. It was a White Winter Pearmain. I cut it down to a bare pole, thinking I could overcome it. That tree made a growth of six or eight feet that season. The next season the same thing occurred in the top of the tree, and I finally dug the tree up. Strong pruning did it no good.

THE PEAR.

Mr. Thomas: My trees, perhaps, differ from any other, but our treatment is about the same as with the apple. Our year-old trees are usually four to six feet high. We plant them and we cut off the top and leave only—say two feet in hight—and then you can have six or eight or ten branches come out. The next year you should cut back two-thirds, particularly if they are Bartlett pears. If you don't prune systematically and thoroughly, and prune every year the trees overbear and ruin themselves. My idea is to prune back every year, and make your trees and branches stocky, so that they may be enabled to bear the fruit when they come into bearing. They commence bearing usually about the fourth year, sometimes the third year. To have our pear trees so that they will bear a full crop, prune them back and make the branches and trees stocky, so that there will be no question about their being able to bear the fruit and not break all to pieces, as I have seen the Bartlett pear particularly.

A Delegate: Do you cut the limbs, or cut the ends off?

Mr. Wilcox: The Bartlett pears on the ends. I cut them as I do a Newton Pippin—I cut them with the idea of getting the head, until I get them started up. The more tops you can get the more fruit you will get. For the first few years you throw the strength into the tree, you lose no fruit, and lose nothing except in the time in which it gets to bearing. That is my experience with that fruit.

Mr. Shinn: I think that the general principles of pruning apply to almost all fruits—certainly to the apple, pear and plum—and I think Mr. Thomas has very correctly stated the general plan which should be followed when trees are planted out. The main object, as I said before, with young trees is to so trim as to make a well shaped head; do not prune with reference to fruit until they begin to bear freely. I always tell everybody to leave the strongest bud on the wind side, and the strongest root you will have will be on the wind side. Rub off all you don't want; if you want four, have four; if two is enough let them grow—let them grow a year. I certainly never practiced summer pruning in trees of that class, but do not let more branches grow than you care about having, considering what will be the future of the tree. Next year cut back. There are various views about that, but I should cut back within 10 or 11 inches. When they start out on each branch they will start out two shoots. You may wait until they have started and do the same thing; rub off as many as you do not want, still referring to the kind of tree you want, and remembering also that you must manage a tree according to its character. If it is a Rhode Island Greening apple tree you need not be very much disturbed about its running up out of reach, and you must prune with reference to that; you must understand the character of the trees and prune so as to throw the branches upwards. But suppose it is a Bartlett pear, then you go on a totally different method. The object, as Mr. Wilcox suggests, is to spread it. If you don't it will run up so narrow that it won't have much value to it. You must leave the buds on, on the outside, then you must force it so as to throw out more branches, and in that way you will keep on say for about three years. If you keep pruning the tree upon that plan you will have a nice big tree. It is troublesome to get a fine head on the Winter Nelis, but if you don't prune too much as you do the others, the tree will straighten itself up and finally be a pretty good shaped tree.

Mr. Strong: I have been told that the Winter Nelis tree requires heavy pruning to make it bear. Now I have got a number of Winter Nelis trees, eight years old, perhaps, but not large trees. There are some of them probably 20 feet high, and they have not borne much yet; probably the most any of them have borne this year has been an average of a box and a-half to the tree. They are covered with blossoms, but I don't get the fruit. I have been trimming very much. Two years ago I cut six to eight feet from the tops of them but in place of getting less growth I think in one year it was bigger than it was before. I don't know what to do with it; some people say you have got to let them alone until they get through growing and then they will bear. Those trees have been growing from four to six feet on top, getting way up. As I said the year I cut them most they grew more than they did any year before, but this year they have stopped growing those big growths and have put out a lot of little ends which grew out about six inches. Some say that is an indication that next year they will bear; I do not know anything about it; perhaps some of these gentlemen who are posted in raising Winter Nelis can inform me about it.

Mr. Berry: I would like to ask any gentleman here from Southern California, whether they have had a crop of pears?

Mr. Bettner: I have pears bearing splendidly.

Mr. Berry: Down where I live, in the further part of the county, it is impossible to grow a crop at all. For three years we put out pear trees; they have budded out and that is all they have done since. So far as the pear crop is concerned I doubt very much whether Los Angeles county will ever be able to touch the other part of the State. I have never found anybody in our section of the country who grows pears at all, and we began digging them all up.

A Delegate: Is your soil strongly impregnated with alkali? I saw a tree the other day that was nearly dead: it was attributed to that.

Mr. Berry: There is a gentleman living two miles from me whose trees grow very vigorously but do not bear any fruit. I do not know whether he had any alkali in his land or not.

Mr. Bettner: I can say that my soil, where I have my pears, is low sandy loam, and they do not bear so well on the heavier soil. I don't think they bear so well on the wet soil in our locality. The Winter Nelis with me grows very strongly. They do not make a robust, thick limb, or thick sprout, but they send out very long, willowy sprouts, and a great many of them, and they need shortening back very much, and pruning, as suggested by Mr. Shinn. I have pruned my trees very systematically in that way, and I have very good, sightly trees, and they bear as fully of fruit as they well can. Half a mile away the trees will not bear nearly so well. Perhaps it is on different soil.

Mr. Wilcox: So far as the Winter Nelis is concerned I have a tree 16 or 17 years old. It bears pears about as large as you see on exhibition here, but I never raised over a box and a half. When I began at my place I thought I would plant Winter Nelis. It is the best pear we have when it is successful, but it is a very delicate pear. The blossoms are so tender that the least storm in the spring or cold will destroy them. My trees were all full of blossoms last year and the year before, but after finding their character out and the experience of others with them, I shall cut the trees down and graft them over. We have large orchards of Winter Nelis, and we have all come to the same conclusion. Mr. Block, one of the largest shippers, has cut his off and put in some other kind. Where the Winter Nelis does well, is where the roots don't grow too deep, and where you do not get too much top. The Easter Beurre grows in naturally damp, cold soil. The Winter Nelis does not owe its want of bearing to the alkali in the soil, because this complaint is so general. Sometimes there are peculiar local conditions. Where we have a gorge in the mountains through which the air sweeps down you find all kinds of fruit suffer, and these local conditions, these atmospheric conditions, are probably the cause of this tronble.

Mr. Gray, of Chico: There is no fruit that will bring in as much money to the northern part of the State, particularly about Chico, as the Winter Nelis pear. That has been my experience for the last few years. We sell all we have at from 2 to 4 cents a pound, and could sell more too. We do not have them as those exhibited here, and do not want them as large; but we have a nice shipping pear for the retail trade. They are probably about 2 or 2½ inches through. We have to prune them there a little different from here or the Santa Cruz mountains. We have to prune with an idea of making all the shade for each tree that we can, on account of the very hot summer. The Winter Nelis gives us a good crop every year, right straight along. We have never had a failure since I have been there, and it seems to be a very profitable tree, yielding from four to seven or eight hundred dollars an acre.

Mr. Stone: This gentleman on my left seemed to leave the impression that we could not raise pears. I want to take that cloud off his mind if possible. I raise a few Bartlett pears myself, and I think I never saw a tree in my life that bears as heavily as the Bartlett pear does, in this section at least, in Compton. My Bartlett pear trees are 8 years old, and I sell the fruit off the tree by the pound, and they averaged me this year $6 to the tree.

Mr. I. H. Thomas, of Visalia: My experience of pruning Bartlett pears would be to endeavor to cut back the lateral limbs and increase the head of the tree by heading back. With the Winter Nelis I would leave the lateral limbs. I never cut that back at all after the second year; let it alone, it goes ahead and shapes itself. The only reason you cut out limbs is that they may be chafing one another. My Winter Nelis, five years old, yielded me six boxes to the tree. They are not large pears but medium size, and the trees have been bearing well since they were three years old. I do not cut out unless they begin to cross limbs and are chafing.

Mr. Wilcox: I know Winter Nelis trees that are as high as this room and have never been pruned; they are apt to grow right up. There is one point not touched here, and that is distance apart in planting. Mr. Block, at Santa Clara, got his trees so near that the tops run all in together; it looks like a labyrinth and his orchard is one continuous mass of fruit on top, and it is a difficult matter to drive under the trees. Some of them are from 10 to 15 feet apart—an old orchard, too.

Mr. Begg: Having once been in charge of a very large pear orchard on the Sacramento river, I have had considerable experience in pruning the pear, and I will say in reference to the Bartlett pear that the tendency of the branches of the Bartlett pear is to go up straight, and I am going to tell you this about pears, gentlemen, and I am making a pretty broad assertion, that there is not a pear tree in California to-day but is allowed to bear too many branches altogether. The Bartlett pear grows quite differently from the Winter Nelis. It grows into a dense, close head; about two-thirds of the wood of the Bartlett pear ought to be cut out. The natural habit of the pear tree is to grow with a central branch and all pear trees ought to be pruned in that direction, and it is a thing that ought to be kept in mind always, to thin out the pear tree.

THE PEACH.

Mr. Gray: I suppose you all think the peach tree is so easily raised that there is nothing to be said about it. I think that part of the Sacramento Valley around Chico is as good a peach country as there is under the sun. I presume that there are other places that other gentlemen would think to be better, but we have some very fine samples of peaches there. In regard to pruning the peach tree, I will give my method, and if there is a better way I would like to know it. In setting out trees I cut

them off two feet high, and trim off every thing on the side. The second year, I leave them from four to six lateral branches and cut them back to six inches long. The next year I leave two shoots to each, and cut them back to about twelve or fourteen inches. After that I cut off one-third of each year's growth, thinning out of course, leaving the necessary amount. We have one peach orchard, which will be four years old the coming January, and this last summer we picked something over 225 tons off 24 acres. Mr. Jessup went through the orchard just before he started to New Orleans, and he declared that there was not a better orchard in the State that had never been irrigated—it has not had a drop of irrigation. At his request I measured some of the trees before he went away, and they were from 4½ to 5 inches through the butt, and from 16 to 18 feet through the tops, and if any one can turn out a better peach story than that, all right.

Mr. I. H. Thomas: Speaking of growing stone fruits, I do not believe there is anybody in this State grows better fruit than I do. I start them in the nursery, and let them get 18 inches high, and then stop that upper growth and bring out the lateral, and at a year old I have got a two-year-old top on the tree. I let them grow and make a growth of 8 or 10 feet. Then I set them in orchard, cutting them back. I watch them, and in June I pinch back again, after they have made a growth of 18 inches, and then I let them run the rest of the season. In the winter I cut them back to about 18 inches of where I cut in June and so on for about two years' growth, and then I increase my growth by spreading it, by pinching it from where I cut in the fall. After they get about four years old I cut back to within 18 inches of where I cut it the last time. After that I let it take pretty much its own will, it will regulate its own growth. After it gets four or five years old it does not make the vigorous growth it does from one to four years old, then I thin it out, and consequently have large peaches.

Mr. Shinn: That is very much the same as suggested by the other gentleman; the only thing is he gains apparently one year by cutting back the nursery trees. Are your customers willing to buy that kind of tree?

Mr. Thomas: They are not willing to pay the freight on that kind of tree, consequently I pay the freight on it myself in order to give them a better tree. The trees are very bulky. I have limbs on them as big as yearlings and couldn't get over 2500 in a car after they are baled, and I have to cut the ends of them off in order to get them in the car.

Mr. Wilcox: I had the pleasure of seeing some of Mr. Thomas' trees in New Orleans, I saw some fruit also at the State Fair before we went to New Orleans, and I believe he had the nicest peaches in Sacramento at that time, the nicest display. But one thing I would like to ask: when a tree gets 10 or 12 years old whether there will be any vitality in it if grown upon the system described?

Mr. Thomas: I know bearing trees near Visalia that are 30 years old; that is, they were bearing trees when I came there in '58. One season they will make a big year's growth, and in the following season that growth will bear fruit in peaches, but they are liable when you cut back that way to get a dead streak on the southwest side of the tree that will get full of borers. They talk about a peach root not being long lived; you take an old peach tree 20 years old and break it down and it will sprout right up from the ground, and will have a healthy bearing tree. The root don't seem to be effected, it is the body above the ground.

Curled Leaf.

Mr. Clark, of Santa Barbara: I have got trees that have been bearing, but the curled leaf came on and injured them so that I did not get any fruit. I would like to hear something about that.

Mr. Shinn: You must do one of two things: you must let the fresh sprouts grow up before the first of July and bud to something else that does not curl, or else dig up the tree entirely.

Mr. I. H. Thomas: We did not have much curled leaf in the San Joaquin valley this season. A year ago we had it much worse than ever before. We never had it amount to an injury before. My opinion of the curled leaf is that the cause is atmospheric. It is true some varieties did not curl last season, but my opinion is it is atmospheric. I take my orchard, for instance; the ground is certainly as wet this season as last season, when it curled so badly; in fact, I think the land, if anything, is a little wetter, but the season it curled so badly we had late rains that came on just as the trees were blooming, and we had excessive moist atmosphere for about two weeks; that is all we know about the curled leaf. Although the land below was a little wetter than the year before, I think it was the excessive moisture in the atmosphere, when the tree is blooming and the leaves coming out, that produced it. The roots are the life of the tree; if the roots keep sound, what is the matter with the top?

Mr. Begg: I happened to be at Salt Lake about two years ago. They were very much troubled with the curled leaf there, and they discovered a remedy for the curled leaf; whether it will apply to California or not, I couldn't say, but it is worth trying, at least. There they dig the soil from the roots of the tree, and then take a knife and score right up into the branches. They say it retards the flow of the sap, so that the curled leaf don't take any hold of the tree, and as soon as they begin to find that the tree is commencing to curl, they do that and they say it stops it at once. I wish some of you who have peaches would try that and report to this convention next year what your success is.

A few words in reference to pruning the peach: There is no fruit that you can improve so much as the peach by pruning. I will take a seedling: A gentleman at Riverside had a lot of seedling peaches that he was going to throw away, and said the peaches were no good whatever, and he wanted to root them up. I told him to wait and let me have a chance at them for one season; I pruned the peach, thinned the branches out thoroughly, and what was the result? At Colton there is a cannery and they make grades of prices: one-half cent for seedlings, one for mediums, and one and one-half cents for the best. My employer got one and one-half cents a pound for all the peaches that I pruned for him; that is one evidence, and I think I can safely say that I can go through a peach orchard and double the size of the peaches by scientific pruning.

A Delegate: What time of the year do you prune?

Mr. Begg: In the winter. The winter is the proper time to prune the peach; thin out the branches; thin out the small branches; have them always equi-distant apart, a good distance; it will close up before the summer is out, and then you will have fine peaches, and you will have to go around the tree and thin out one-half the fruit, and that is the way you treat peaches.

Mr. Wilcox: I would like to say, in support of the idea I advanced, that I think Mr. Thomas' place is an exceptional one; I do not know of an orchard in this State that has been planted 20 years and not pruned, that the trees are in good condition. I don't believe there is a healthy tree in the State 25 years old that has not been pruned, but where Mr. Thomas is he has a peculiar kind of a soil, that is naturally loose enough, so that the water don't stand on it. It is a very favored locality where a man can keep a tree alive all the time and not prune it.

Mr. Thomas: I can state there is a sedimentary deposit there in an old channel, and there is water in the channel. My young orchard is about seven years of age. To grow that orchard to be 20 years old I would certainly go to work to head them in and keep that in growth; but I do not cut back so severely after my orchard is four or five years old, as I do until I get it up to that point, but I cut it back some.

THE PRUNE.

Mr. Aiken: To the discussion of the prune and plums, of course the same theory will apply. I have not much to say in relation to it. The prune and the plum ought to be a vigorous, healthy growing tree, and in places where it is in a poor, rather light, dry soil, of course it will make the growth lighter; and of course it would not need the amount of pruning back that it would in a strong soil to raise a good fruit. My opinion is that where a good apple or pear would grow, a good prune can be raised. We must try and raise large, well-developed prunes, since we find where there is very little growth of wood the soil is not very good, the prunes are very small and have no great value for drying. My idea of pruning the prune or the plum tree, is to make a handsome tree with plenty of limbs; and prune it back so that it will give the limbs great strength and bearing space. In that way you can raise a large amount of good plums or prunes.

A Delegate: Do you thin out much?

Mr. Aiken: Not very much, unless the limbs cross, because when they begin to bear the tree opens very nicely. I have eight-year-old French prune trees, and though they didn't average it, many of them had 800 pounds of French prunes on this year without much affecting the form or the shape of the tree. They were so pruned and so strong, and with such a broad bearing space that they bore that amount of prunes, and very easily, although it has been a dry year and they were not quite as large as they would have been if there had been a little more moisture. I think the great mistake in raising the plum and the prune is to leave too few limbs, say one limb way up in the air and the other one in another direction like two arms. On such a tree you can raise very little fruit, and it would be of very little profit. I am of the opinion, too, that this pruning should go on each year and give a fine form and strength and bearing space, and when the tree bears and gets to be over six years old and is in good bearing you don't need so much pruning back. Indeed, I think, when it is eight, or nine, or ten years old I don't think it needs much if any pruning back; of course, take out the old limbs to keep it in good form or shape. If that is not a good way to prune the plum I would like to know it.

A Delegate: What is the character of the soil?

Mr. Aiken: These prunes that bore so heavily were on dark, rich loam—you might call it a sandy loam, and the clear soil under those trees is, acording to my measurement, about 25 feet in depth. It is a very rich soil, and we have from 60 to 80 inches of rainfall in winter.

A Delegate: Is the French prune a regular bearer?

Mr. Aiken: Never fails; that is a remarkable feature of the production. It will bear a good crop each year without any failure from any cause I ever heard.

A Delegate: I heard one gentleman say that they were bearers only once in two years.

Mr. Aiken: That is hardly so in our central part of the State, and another thing the French prune especially needs rather a long season, a cold season. I don't think it would be profitable to raise prunes in this section, or in the hot valleys. A few have tried it, and I do not think they have made a success of it for many reasons; on account of the heat and the drying up they do not mature in size, or form or taste.

A Delegate: Do you irrigate?

Mr. Aiken: No, not at all. We try and cultivate well. With me there is a very thick clover and alfillerilla grows in the orchard during the winter, and I turn it under each year for manure for the trees. The soil is very rich but I have done that plowing under regularly, while a neighbor of mine never allows a spear of grass to grow, and I believe he starved his trees out. I believe you can starve trees as well as anything else.

Mr. I. H. Thomas: I have been observing the growth of the prune in the San Joaquin valley, because the question is asked us as nurserymen what to plant. In Fresno, in the Central colony, the oldest trees I know of growing there are about seven years old. The land is laid off in checks, one check in French prunes and so on. They have adopted the system each year of pruning in close, and got but very few prunes; then the next block of trees is not pruned at all, except to cut out cross limbs, and a heavy crop is the result. That has been my observation in watching that orchard for three years, and from that observation I do not believe I would do much pruning of the French prune after you get it in shape as a three-year-old.

Mr. Aiken: Don't the prunes there burn? Is it not too warm for the prune?

Mr. Thomas: No.

Mr. Aiken: I was going to ask if you have any experience in this part of the State with the prune, the French, the German or the Hungarian?

Mr. Milton Thomas: I will say that the French prune, in Los Angeles county generally does well, more especially in the Santa Ana valley. I heard Mr. Center, a very reliable gentleman, say that parties there with six-year-

old trees had six and eight hundred pounds on their trees for a number of years; they seldom fail. As to plums, there are very few varieties of plums that do well in Los Angeles county to my knowledge, and I do not recommend anybody to plant a plum tree here, but a French prune does well so far as I know.

Mr. Wilcox: Perhaps the largest prune orchards in America are in the Santa Clara valley. We have them there to the extent of 100 acres in an orchard; one person has more than that. Those orchards have sold for large figures, some of them, but they are planting so extensively that some are almost afraid to plant them. You will see that of the French prunes there are several types that do not always appear the same. These prunes exhibited here are an odd type of prune; if they had been well handled and put up they would have compared well with any in the market. There is this about prunes: when they bear too heavily on dry ground they will be small. Mr. Aiken said, at the last meeting of the State Horticultural Society, two or three weeks ago, that it is his impression, from what he knows of the Chicago market, that you must depend hereafter on the size of the prune more than anything else. There is a kind called the "Robe de Sergent." I believe that is the name. That prune is said to be very much larger. I shall plant some of them the coming winter. I intend to plant a great many prunes. I have faith to believe that I can raise them, although it may be that we will need a higher tariff to make them profitable; still it pays very well, and the amount used in the United States at the present time is enormous, and I think we will use more. It is the cheapest fruit we can use, and very healthy. I think the day will come when we will supply the consumers in the East. I would encourage every man to put in more prunes where they do well.

A Delegate: Do you raise the French prune from the cutting?

Mr. Wilcox: We do not, but we graft it on another kind of cutting. Whenever the soil is very rich suckers will come up; now, if you expect to raise a good tree, that will not sucker, do not graft on any of those suckers. Wherever the peach will grow it is best to graft on peach stock, nevertheless east of the Rocky mountains they graft peaches on plums. We do the reverse, and wherever you have good moist soil you can graft on the peach or on most anything that will take the plum.

Mr. W. H. Aiken: There is another prune besides the French prune that is well spoken of. I think they call it the Hungarian prune. It is a prune that will ship well; that is an upright grower and needs to be pruned to make form and shape. I would say don't prune a plum tree much; but that prune like many plums will shoot right up in the air so that it is impossible to pick the fruit. There is no sense in letting it grow so that you can't get the fruit when you raise it. You want to give it a good bearing space where you get it. The German prune is a good shipper, but indeed, of any fruit, the French prune will ship East, and that is what we are going to do, if we get low freight: send them all over there. I really believe that the French prune is the best drying plum we have, but I do not want you to go into the prune business; I am in it myself and I do not want to invite competition, but undoubtedly the prune will do well on good soil. People tell me that poor soil is good for fruit; I do not know what it is good for; it is not good for fruit in my estimation; you cannot get a soil too good for fruit nor too rich, but trees grown in good soil must be pruned.

Mr. Gray: I think it is a mistake to call the Italian prune a good shipper. I would not advise anybody to plant them for shipping. In the first place they drop from the trees before they ought to be picked, and when they are ripe they are so soft that you cannot dry them at all in any dry-house I have ever seen. If you get them dry enough they will drip; if they are not dried quick enough they will granulate. They are a very poor fruit. We have a great many more of them than we wish we had. The only way we can dry them is to cut them just as we do the plum and sell them for a sweet plum.

Mr. Wilcox: There is more than one kind of German prune, one originally egg-shaped. I raised that. There is another kind, and they, I believe, are what Mr. Aiken says are very good to ship. There is also the Oregon silver prune, very large, something like the egg plum, and which was thought by some of us to be merely Coe's Golden Drop. It is very large and it makes a beautiful prune.

Protection to the Fruit Industry.

The convention met for the fifth and last day's session on Saturday, November 23d, President Cooper in the chair.

Mr. Aiken presented a report in the protection of the fruit interest, with a memorial, as follows:

LOS ANGELES, CAL., Nov. 21, 1885.

To the Fruit Growers' Convention of California:

Your committee on a memorial to Congress would respectfully recommend the adoption of the memorial herewith submitted, and that the same be signed and certified by the president and secretary of this convention and copies of the same be forwarded to each member or the California delegation in Congress.

W. H. AIKEN,
Chairman of Committee.

Memorial of Fruit Growers' of California.

LOS ANGELES, CAL., Nov. 21, 1885.

To the Honorable, the Senate and House of Representatives of the United States, Washington, D. C.:

Your memorialists, the fruit growers of the State of California assembled in their annual convention at Los Angeles, this 21st day of November, 1885, most respectfully represent:

That the soil and climate of the State of California are adapted to the production and preparation of the prune, the raisin and the olive of good quality and in quantities sufficient, eventually, to supply the demand for such products in the United States;

That these important industries are in their infancy and stand in great need of protection from competition with foreign prunes, raisins and olive oil produced by the cheap labor of Europe.

Your memorialists have found by actual experience that the present duties of two cents per pound on prunes and raisins and one dollar a gallon on olive oil afford no real protection and give little encouragement to those engaged in these great and growing enterprises in California;

That an import duty of three cents on prunes and raisins and two dollars per gallon on olive oil would enable California to successfully compete with the world on these products in the markets of this country and pay fair and full wages to American labor.

The growing of the orange and lemon in the

United States should also be encouraged and protected from competition with like products of foreign lands and in the opinion of your memorialists the duties on these products are entirely too low.

Your memorialists further represent: That the Mexican Reciprocity treaty now under consideration for Congressional action seriously threatens the future of many agricultural industries in the United States and especially that of fruit growing in California.

The long established policy in this country of the protection and encouragement of American labor and American industries should not be changed so as to practically protect and encourage Mexican labor and agriculture.

The Mexican Reciprocity treaty would in effect admit the Republic of Mexico to the Union, to a share in our great prosperity and give its people a right to compete with Americans for trade in our markets without bearing the burdens of this government and without any love for this country.

Your memorialists therefore respectfully and earnestly request the Congress of the United States to so adjust the tariff on the products above referred to, as to make us a prosperous and independent people and to decline legislation intended to enforce and put in operation the Mexican Reciprocity treaty.

Discussion.

Mr. Aiken: This memorial does not ask for a perfect protection, and yet it seeks to acquire what we so much need. I believe in the American institutions; I believe America should provide for the many. I believe we can raise the prune, raisin and olive, and also the orange and lemon that will supply the markets of this country, and keep at home our money, and I hope there will be a free discussion of this matter because we ought to hear from everybody.

Mr. Hatch: While I endorse the memorial from personal reasons and for the benefit of the State of California, at the same time I do not think there isa real estate agent in Los Angeles that would indorse that unless they knew that Congress would act favorubly upon it, as it would hardly like to place before the Eastern people that we cannot make profits on these very things; that is, sufficient profits without extra action in our favor. As it now is, we can make living profits, it is true. If we are assured that favorable action will be taken upon this we could make extraordinary profits. The question seems to be in my mind, Is it advisable for us to place such an advertisement before the world?

Dr. Kimball, of Alameda: I think that the principle involved in this resolution, or memorial, is decidedly unjust to the status or standing of California at the present day, because we go before the nation as a supplicant; a little handful of people on this coast that are engaged in raising the olive, the prune, the raisin, grape and the fig, we go before the people of this great commonwealth that reaches from sea to sea, a boundless empire almost, and we ask them for protection. It places us in an unjust position in regard to ourselves, in regard to our great prosperity, and in regard to our great prospects for the future, and as Mr. Hatch has just said, I believe that every real estate agent ought to take up his tomahawk and scalping knife and go for the memorial. It is an advertisement of our inability, notwithstanding our favored soil and our wonderful climate, and all these things, to compete with the people in Germany, and where they are raising prunes. Is this an advertisement that will bring emigrants here to California, that will cause the peasant of Europe to come out here and work for us? I think that the gentlemen when they advocate this memorial are slightly mistaken. The protective policy has been the policy of my whole life, but when we come down to the question of compelling the people from the Gulf to Canada, and from the Atlantic to the Sierra Nevadas to pay two cents more a pound for the plums in their puddings, I don't believe it will do. I believe that the people will regard it as a kind of an insult when they read the magnificent reports that are sent from this glorious country here, and this beautiful climate, and find that men are making $250 per acre from the raisin grape, and that those poor benighted individuals around the bay are making $150 to $200 per acre from their prunes, and still they want help, while the people in the mountains in the East are willing to work for a profit of $3 per acre, or even $2, and I, for one, am not in favor of the memorial.

Mr. Bettner: I concur to a large extent in the views that have been presented by Dr. Kimball, that is to say in the reasonableness from one standpoint of those views, but as the manufacturer sells protected goods to the fruit grower and to the agricultural interest so as to receive all the benefit of what has been, I may say to a certain extent at least, the policy of this Government, it is not right that the agricultural interest should bear all the burdens. We have often seen a representative of the interests of this country go to Congress and claim substantially as to the manufacturing interest what Dr. Kimball has said refering to Southern California. This agricultural interest will bear the burden and receive none of the benefits from this proposed Mexican Reciprocity treaty. Such a treaty of reciprocity with Mexico strikes directly at some of the most important interests of the country, not only the fruit interest, but some other interests of the State; also the tobacco interest and the sugar interest of Louisiana. Why on the same principle ought not the agriculturalist to have the benefit of the free trade of England, France and Germany and other nations that export to this country, instead of paying, as now, the high tariff, which increases the cost to him of producing every article that he does produce?

Mr. Wilcox: I am in favor of the protective tariff so far as it is necessary in the commencement, and this may not be necessary always. I understand from Mr. Blowers, who took the premium at the World's Fair, at Philadelphia, for American raisins, against the world, that he has not made a fortune at that business. I met him in New Orleans last year, and he still asked for a tariff and circulated his petitions a year or two ago for that purpose, and I believe t the present time it would be a wise policy to do so; because if we undertake to compete with the producers of Europe, it means that we compete in the price of the labor also that produces those products in Europe. Capital is also cheaper there, and a vineyard in France that is worth $2000 per acre is worked on capital worth 2 and 3 per cent annually. Now, if we want the laborers here to thrive and to invite laborers from all parts of the would, let us tell them they can make money here as well as to enjoy in company with us our beautiful sunshine. Only a few years ago we did not know that we could make wine for the market, and it

was only by a protective tariff that we succeeded in doing it. We may not always need it for producing wine, we do not think we will, as soon as the people find out what our wine is, and like it as well as they do any other wine, we can compete with any producers in the world. So it is with raisins, after we get started and our raisins have a reputation, and the people want them and feel that they must have them, they will pay our price; but we have certain disadvantages, and I think that protection on the start would be a great advantage to the fruit industry of this State and the laborers of the State.

Mr. Hatch: So far as the Reciprocity treaty with Mexico is concerned, I think it is of vital importance, and we should all endorse most anything that is antagonistic to it.

Mr. Milco: I will state concerning the protection of sweet oil, and of the prune and the raisin, from my own experience. I know that in Dalmatia, which is a great olive country, the laborers are paid from 15 to 25 cents a day, and the oil there is worth something in the neighborqood of 50 cents a gallon. Now the freight from that country to New York these days cannot be very much, and if we should allow the oil at any time to come into competition with our oil in this country, no matter who has got an olive orchard, he will have to cut it down, because those people at 50 cents a gallon for their oil will make money while we will starve. I cannot get anybody to work for me for less than $30 per month and board; that is, white men—men that will stay with me year in and year out. Of course, I can pick up tramps and work them two or three days for half a dollar each, but as soon as they get a little cash they will go. I want men that will build up this country, and if we pay white men good wages we expect those men will stay and grow up with us, and whenever they make a little stake they will be looking around for a little piece of land to plant a little orchard or vineyard or something of that kind. But if we are going to allow European goods of that sort to come in competition with us, such as raisins and prunes, and particularly sweet oil, unless we have a protective tariff, as my friend Mr. Wilcox, of Santa Clara says, for a certain period, until we educate the American people to our product, we will not succeed. I will give you a little experience in my own business, this buhach for an illustration. When we went to New York City and offered our production, pure as it was, to those people over there, they said: "Create a demand for it; we do not know anything about your goods; if there is a demand for it we will buy it; if there is no demand we do not care about it; we are handling those goods from Europe and they suit us." That is what they told us, but just as soon as we made the people understand, and asked them to go and buy it and try it, they can't sell those other goods at all. They have them and they are rotting on their hands, and so here and every other place you must be encouraged. We must be given a chance to introduce our own goods to our own people, and so the chances will be that when we get to grow it largely it will probably compensate us for what we will probably have to sell for less, but to introduce any new goods, no matter what it is, of the production of this country, it takes all a man can get out of it to place it. That is my experience, and unless we have some protection we will have a hard road to travel.

Mr. Wilcox: Those who know our prunes know they sold very readily for 10 cents a pound up to two years ago; within the last year the highest quotation in our market has been five cents. That shows which way the wind blows, and those who intend to raise prunes largely, expect protection, if they need it. I think it safe to ask and receive protection for a limited time.

Dr. Congar: It seems to me that in the first place that we should ascertain how much pure olive oil is imported to this country, and to ask Congress to pass a law to have inspectors so as to know how much cotton seed oil we are using and how much real olive oil is brought to this country. I cannot find a bottle of pure imported olive oil in a drug store, nor grocery house, nor other places where it is supposed to be kept. I bought one bottle of olive oil from our president, and I defy any person to go into any house in this city, or to any other place in Southern California and find an article that compares with it; in other words you cannot find any olive oil. Now ought we not to know how much oil we are receiving from abroad before we ask Congress to protect this cotton seed oil at the rate of $2 a gallon? That is what ought to be done. Congress ought to pass a bill to find out the adulterations in the first place, and then we can legislate to protect that which should be protected.

Mr. Bettner: There seems to be a difference of opinion, and whatever action should be taken on this question, should go before the country as the unanimous expression of this convention. Now so far as the memorial refers to the Reciprocity treaty I believe that there can be but one idea, and as a member of that committee, so far as I am concerned, I am perfectly willing that our reference to the other matters, excepting as to the Reciprocity treaty in that memorial be withdrawn, and that we go before the Senate and House of Representatives with the memorial referring to that Reciprocity treaty which undoubtedly is unjust, inasmuch as it is special legislation intended to benefit a certain set of our citizens at the expense of the other.

Mr. Aiken: As to that, this matter was referred to the committee and we had to deal with all this subject of prunes, raisins, olives etc. The committee, in starting out, thought that they would place it in the form that is presented before you. Just because one or two gentlemen have very strong ideas upon the subject, I do not see that that is any very good reason why we should abandon this great movement. All of us must admit that when we come in competition with foreign labor in the preparation of these very things, we cannot raise them or prepare them or sell them in our markets. There is the matter of freights: we all know that two cents a pound would give us more than the foreigner receives or expects to receive for his fruit and they have cheaper freight than we do. Now, to come down to the raisin and the dried fruit: Put them in the market at 2 cents, and we would have to abandon our homes and take to the woods and go to logging. So far as the raisin is concerned, my friend Mr. Blowers said to me very lately: "I shall destroy my raisin vineyard and put in alfalfa and go to raising hogs." That is the situation he is in. It is time now for us by main force to pro-

tect the horticultural industries in this country, and, as was very well said by Mr. Bettner, the agriculturists have asked very little and have received very little in this country. Our protection is almost nominal, while every manufactured article that the agriculturists use is protected. If that is the policy of this country, why not share in that protection? We certainly ask but very little. They are giving us now one cent on prunes; we ask in addition one cent to build up this industry and to save three millions of money at home, and to keep up good prices for American labor. Now, the reason why the price of the prune was reduced from 10 or 12 cents to five, was because the foreign prune raisers threw upon this country a bankrupt stock of fruit last year. They had an excessive supply, and rather than dump those prunes in the ocean they sent them over here and sold them for whatever they would bring, and, of course, broke down our market. The protection of one cent a pound was nothing to them, owing to the cheapness with which they could raise them, and with the cheap rates of freight across the ocean, they utterly destroyed our prune market. The prunes of California cannot sell in competition with foreign prunes at one cent protection, and I do hope this memorial may be at least adopted by a large majority of this convention and given out to the world as the expressed opinion of the fruit growers of California.

Dr. Kimball: I am opposed myself to the Mexican Reciprocity treaty, but in regard to my friend of the Santa Cruz mountains, Mr. Aiken, I would like to give the convention the result of a little figuring. That is a prolific country where he is, and I think I have heard the gentlemen himself state that he has had very young trees that bore in the neighborhood of 600 pounds of prunes. I have figured on the basis of 300 pounds to the tree and 127 trees to the acre, and that will give the astounding result of 38,100 pounds of green fruit per acre. You all know that prunes dry down about three to one, and that would give us about 12,700 pounds of dried fruit per acre, which, at two cents a pound, would amount to the sum of $254; and if the people of California cannot live on the profit of $150 per acre, throwing out the balance, they had better stop business. Prune orchards are one of the best paying things in this State, even at four cents a pound, and the idea that we should inform the whole American people, where they are not able to raise prunes, that we must throw upon them the penalty of having to pay an excessive price of two cents more a pound for prunes for the purpose of putting additional benefits into the hands of growers of prunes in California, who have already became rich at it, I think it essentially a wrong idea.

In regard to my friend Mr. Milco, who believes in a high duty on olive oil, I wish to make the suggestion, or the inquiry rather, as to how long he thinks it will take for the people of the United States to become great olive oil consumers if they have to pay a duty of two dollars a gallon. If there is a protection of two dollars a gallon on all the olive oil imported, there is no such thing as a reformation which will result in using olive oil largely in this country, and we shall all die of starving before that time will come. It is well enough to be satisfied with a good thing, and the profits of the people of the East are much smaller than ours. Notwithstanding you receive small profits on the production of the orange, yet wisely managed and wisely conducted, there are profits in your orange orchards, there are profits in your grape and raisin interests, for the consumption of your fresh grape and of your raisin is immense and it is increasing. It seems to me that the policy of the people of the State of California should be to furnish the largest amount of good fruit at the cheapest possible price, instead of hunting about and rendering it more difficult to obtain it, and that this should be the purpose of every one engaged in this business in California.

Mr. Rice: As the gentleman said a few minutes ago, the real estate agent has his tomahawk and scalping knife, and is figuring the probable profits he can made on an orchard. I am very sorry he gave the figures of the profits in growing prunes. A few years ago a gentleman from San Francisco—Mr. Pixley—was down here, and he saw a gentleman who had just sold his oranges off of one tree for $10. Mr. Pixley figured up and said 100 trees to the acre would yield a $1000 per annum, and that on a small place of just 160 acres, a section of land, his income for the year would be $160,000. It was not a very big farm, either, and the oranges were just commencing to bear, so in a few years it would be much larger, and every real estate agent in this country (there is only a few of them, by the way) have been using the figures ever since, and the latest bulletin I have seen from the real estate office is doubling on it, because the trees are growing a great many more oranges. This argument may be good to a certain extent. We are making a fortune out of our prunes and olive oil, and so on, in some instances. I know one gentleman this year who has got five acres of Muscat grapes, and he has got the coin in his pockets—$1250 for that raisin crop; $250 per acre. That is a very handsome profit, but those are not the figures of the whole raisin crop of Southern California or of this county for this year. I am afraid when the balance sheet is made up of the raisin crop this year, it will not show much more than $25 profit per acre, and, by the way, one firm that has 50 acres of raisins out in this range, is not going to make a big profit on it, and on the whole there is not so much profit. I know a gentleman that did not make a cent out of it; in fact, he lost money. It must be an isolated case that can make large gains. It is true that we view this tariff question by our own opinion, and our local ideas and our political predilections, and we want to stand by them through thick and thin; but I would like to see the farmers stand together on something, even if it is no more than to protect our interests here in California. I hope we will all stand together on this home memorial. I would like to see it adopted unanimously.

Dr. Chubb: I think that there are reasons why we can ask for this additional aid in a certain direction aside from the Mexican Reciprocity treaty. Now, we have been discussing here the best fruit for profit to grow in this State, and we have got all the information possible as to whether the prune is a profitable fruit, in the opinion of the men who have gone thus far in its cultivation. It is with very great difficulty that we even get a recommenda-

tion to plant the prune, and why? They say it is very doubtful whether it will prove a profitable crop in the State. We, in the southern part of the State, do not know much about the prune crop but we do know about the raisin crop, and if the raisin crop were as profitable as some men seem to imagine, the real estate agents of this and every other city in the State of California would not need any other inducement to bring any amount of immigration into this country. The fact is, gentlemen, that while there are exceptions to all rules, the raisin industry is not a profitable industry at this present moment. There are a great many drawbacks to that as well as to the other fruit industries of this State, which are only discovered when the man thinks he is going to make a fortune and starts in making raisins. The foreign crop of raisins is produced in a country where on a general average the labor is only 10 cents a day, and it is not the poor man there that makes the profit. It is the system that cramps him down to that and keeps him there, and the dealers who take the raisins off his hands at those prices are the men who make the money off of it. We do not propose that our American labor shall be reduced to that situation. We hope to offer inducements to American labor to produce these things that are so largely consumed in our own country, and these industries for which we ask protection to-day are not California industries specifically; they are American industries, they are a part of the interests of this great commonwealth and must be protected if they need protection. The idea that it is an additional burden to consumers in the East, I believe should be looked at in this way: We are consuming the products of Eastern labor which have had protection for years and which is still planning for protection, and we are only asking a reciprocal advantage for our industry. The very fact that we might add 2 cents to raisins or to prunes is not going to be an observable item in the consumption of these articles upon the American continent. It is not that it adds to the expense of the consumers, but that it is so much more of a protection against the introduction of foreign fruits. The question comes then, with this additional import duty upon foreign fruits, that with all their advantages and cheap labor can afford to flood this country with foreign fruits to the disadvantage of our own. That is the point we are endeavoring to make out: it is not that we want to oppress the Eastern consumer by adding to the price of consumption, but that we want to shut out to a certain extent the profits given to foreign pauper labor and to foreign capitalists upon foreign fruits to the disadvantage of our own. All we ask is that we have the same free, generous support in the development of these interests that our Eastern friends on the Atlantic shore have had to like industries for years.

Mr. Wilcox: I am proud to represent that section where the prune industry seems to be most extensive. In Santa Clara valley it is a serious question now about the future of the prune. There was a prune excitement a few years ago, and everybody who had ground paid all they asked for the trees and put out the prune. The highest the prune will bear, that I know of, is 600 pounds—full-grown trees—and the ground was irrigated. Now, when a prune tree gets of a certain hight it does not grow well. It bears on the ends of the limbs and will exhaust itself in time, and that is a matter that should be taken into consideration. I remember when prunes sold for $1 a pound; they came down gradually, but were high until California brought the prices down, and it is us that the Eastern consumers have to thank that the prices are what they are now—so I say it is safe to give us a little protection at this time.

Mr. Hixson: There is no doubt, whether we get additional duty on prunes or not, that this is one of the great industries of the State, and it is not going down even if we do not succeed in getting more protection. I do not pretend to say but what a cent more a pound would help us; but suppose we do not get it? I don't want the people who read these proceedings here to think we are going to become paupers if we do not get it. I have received a letter since I have been in this city, of the sale of some of Dr. Kimball's prunes at eight cents a pound. There is no trouble at all about our raising prunes and selling them for enough to give us a profit. All you have got to do is to raise good fruit and put it up in good shape. We can put it up as well as the French, and they don't expect less than 12½ and 15 cents a pound; and when you get good prunes, like Dr. Kimball raises, they will sell. If you will just prune your trees a little more I will guarantee to sell the fruit. I don't want it understood that I am not in favor of this memorial, but I want you to understand that if you do not get it, there is still a chance for people to make a living without it.

Mr. Kimball: I move an amendment to that memorial to strike out all except what refers to the Reciprocity treaty. The amendment of Dr. Kimball was lost.

Upon motion the memorial was unanimously adopted.

Mr. Bettner offered the following resolution, which was adopted unanimously:

Resolved, That it is the unanimous sense of the Fruit-Growers of California here assembled, that the Mexican Reciprocity treaty, and all other Spanish-American treaties now before Congress, are opposed to the fruit interests of California, and other great agricultural interests of the United States, and that any legislation tending to carry them into effect should be opposed by every delegate to the Congress of the United States from this State, and that the secretary of this convention be instructed to forward a copy of this resolution to every member of that delegation.

True Labels.

Mr. Webb offers the following resolution which is adopted unanimously:

Resolved, That Congress be requested to so amend the revenue laws so as to require every article imported, whether dutiable or free, intended for human consumption to contain a true label of its contents; it be subject to confiscation by default.

Adjournment.

Dr. Chapin: I move that the convention express its thanks to Los Angeles Pomological Society and its obliging and efficient committee for the kind attention and valuable services they have rendered the fruit-growers of the State during the sessions of the convention, and also to the press of Los Angeles, which has made such thorough and complete reports of the proceedings of the convention.

The motion was carried, and the convention adjourned *sine die*.

Meetings of the State Board of Horticulture.

Minutes of the Semi-Annual Meetings of the State Board of Horticulture for the Fiscal Year Commencing April 1, 1885.

OFFICE STATE BOARD OF HORTICULTURE,
April 23, 1885.

This being the regular day for the meeting the members of the board met at 11 o'clock A. M. There were present Messrs. Ellwood Cooper, Wm. M. Boggs, A. F. Coronel, Dr. S. F. Chapin, Dr. E. Kimball, G. N. Milco, N. R. Peck, General M. G. Vallejo and A. H. Webb, secretary, being a full board excepting the Hon. H. C. Wilson, who was absent. President Cooper took the chair and called the board to order. The secretary then read the minutes of the preceding meeting, which were approved as read.

President Cooper then recommended an election of officers of the board, which was agreed to, and on motion Ellwood Cooper was unanimously re-elected to the office of president. On motion General M. G. Vallejo was unanimously re-elected to the office of treasurer, and A. H. Webb was unanimously re-elected to the office of secretary. General Vallejo then moved that the board proceed to the election of the Inspector of Fruit Pests, which was agreed to, and the president declared nominations in order, whereupon General Vallejo nominated Dr. S. F. Chapin, and G. N. Milco nominated Mr. Matthew Cooke. On motion of N. Peck the nominations were closed.

President Cooper suggested the propriety of inviting candidates for Inspector of Fruit Pests to appear before the board and give their views as to the duties of that officer.

This was opposed by Commissioners Boggs and Peck and advocated by Commissioners Kimball and Milco, and after a full discussion of the question finally agreed to, and at 12:30 P. M. the board took a recess for one hour.

At 1:30 P. M. the board reconvened, all the members of the morning session being present, President Cooper took the chair and called the board to order. On motion of Dr. Chapin, Mr. Milco was requested to invite Mr. Matthew Cooke to appear before the board and give his views regarding the office of Inspector of Fruit Pests. Mr. Cooke then appeared, and upon being introduced, proceeded in a brief and concise manner, stating that if elected his whole time and attention would be given exclusively to the duties of the office and that he would strive to promote the best interests of the fruit-growers of the State.

Mr. Cooke spoke of his large and valuable collection of insects, which in his long researches in entomology he had collected, and which, if elected, he would place in the office of the State Board of Horticulture.

Upon the conclusion of Mr. Cooke's remarks the board went into executive session and then proceeded to ballot for Inspector of Fruit Pests with the following result: Dr. S. F. Chapin received five votes, Matthew Cooke received two votes and Ellwood Cooper received one vote, whereupon the president declared that Dr. S. F. Chapin having received a majority of all the votes cast, he was duly elected to the office of Inspector of Fruit Pests.

Mr. Coronel then spoke of holding the next meeting of the board in the city of Los Angeles as being but an act of justice to the southern section of the State, when Mr. Boggs offered the following resolution:

Resolved, That the next meeting of the board shall be held in the city of Los Angeles at such time and place as shall hereafter be determined, and be it further

Resolved, That there shall also be held at the same time and place, under the auspices and direction of this board, the Fifth Annual Fruit Growers' Convention of California. Mr. Boggs and Mr. Coronel strongly urged this resolution and it was unanimously adopted.

The treasurer's report was then read and approved.

A committee of arrangements for the holding of the next meeting of the board and the Fifth Annual Fruit-Growers' Convention at Los Angeles was then appointed, consisting of Commissioners Coronel and Chapin.

The matter of appointing quarantine guardians for the different fruit sections of the State was then discussed at length, and also the efficiency and non-efficiency of the law to prevent the spreading of fruit and fruit-tree pests and diseases, approved March 9, 1885: some members holding that it would be impossible to get suitable and competent men who would care to assume the responsibility of informing on, and if necessary, proceeding to enforce the law against their own neighbors, while Mr. Milco thought otherwise, and urged the necessity and importance of immediate action by the board in the appointment of quarantine guardians, and a vigorous and determined effort made to enforce the law, that the people of the State might see that the board were endeavoring to do something in furtherance of the duties they were appointed to perform. This view of the question finally prevailed and the following appointments were made:

Dwight Hollister for the Sacramento river district; J. W. Mansfield for road districts, Nos. 1 and 2, Napa Co.; E. P. Foster for the fruit district comprising the town of Ventura in San Buenaventura Co.; W. W. Chapman for the fruit district contiguous to and including the town of Petaluma in Sonoma Co.; J. C. Weybright for the fruit district comprising Calistoga and vicinity; John H. Guill for the fruit district comprising Chico and vicinity in the county of Butte; Clinton King for the fruit district comprising Alameda valley, Alameda county; Geo. D. Kellogg for the fruit district of Newcastle, Placer county; S. A. Wood for the fruit district including Penryn and vicinity, Placer county; A. T. Perkins for the Fruit Vale fruit district, Alameda Co.; H. G. Ellsworth, for the Niles, Mission, San Jose, Irvington and Centerville fruit districts, Alameda Co.; W. H. Robinson, for the fruit district adjacent to and including the city of Stockton, San Joaquin Co., and Dr. G. Eisen for the fruit district including the town of Fresno, Fresno Co.

In the matter of quarantine guardians for the city of San Francisco it was assigned to the

Inspector of Fruit Pests and the advisory committee for future action.

A committee consisting of Wm. M. Boggs and Dr. Kimball was appointed to draft suitable resolutions on the death of the late W. H. Jessup, which was unanimously adopted with a standing vote, and the secretary directed to forward to the bereaved family and the press a copy of the same. On motion the board adjourned to 8:30 the following morning.

Friday, April 24, 1885, 8:30 A. M.—The board met at the hour appointed, all the members of the previous day being present. President Cooper took the chair and called the board to order. After reading the reports of the various committees, on motion of Dr. Kimball an advisory committee was appointed consisting of Ellwood Cooper, Wm. M. Boggs and Dr. Kimball, to act during the recess of the board in the consultation and direction of such matters as they may deem necessary, Ellwood Cooper being chairman of said committee.

The board then appointed John R. Sweetzer quarantine guardian for the supervisorial district, comprising the town of Novato, Marin county, when on motion the board adjourned to meet at their next regular meeting.

The November Meeting.

The board met in the exhibition hall in the city of Los Angeles, at 1 P. M., on the 19th day of November, 1885.

There were present Messrs. Ellwood Cooper, H. C. Wilson, Wm. M. Boggs, Dr. E. Kimball, Dr. S. F. Chapin, G. N. Milco, and A. H. Webb, secretary. Absent, General M. G. Vallejo and N. R. Peck. A letter was received from General Vallejo stating that he was prevented from attending the meeting of the board on account of sickness in his family, and expressing his regrets.

President Cooper took the chair and called the board to order. The secretary then read the minutes of the preceding meeting, which were amended and then approved.

The president then called for the reports of committees. The committee appointed to make arrangements for the Fifth Annual Fruit Growers' Convention, consisting of Dr. Chapin and Mr. A. F. Coronel, then made a verbal report through Dr. Chapin, and that portion of the report referring to the employment of a stenographic reporter by Messrs. Boggs, Chapin and Milco, when on motion of Dr. Kimball the board adjourned to 12:45 o'clock to-morrow.

November 21, 1886, 12:45 P. M.—The board met as per adjournment. President Cooper in the chair. Present, Messrs. Cooper, Kimball, Coronel, Milco, Chapin and Boggs.

The President called the meeting to order, when Mr. A. K. Whitton, the stenographic reporter, appeared before the board and stated that the work of reporting the proceedings of the convention was more than he had anticipated, and that he would be compelled to charge for the work in proportion to the amount to be done. After a full discussion of the subject, it being conceded that the work was greater than had been anticipated, it was finally moved by Mr. Milco, seconded by Mr. Boggs, that Mr. Whitton be allowed for his services in reporting, transcribing and preparing for the printer the entire proceedings of the convention, the sum of $265, which was accepted by Mr. Whitton.

A proposition in writing was then handed in by Messrs. Dewey & Co. of the RURAL PRESS of San Francisco, proposing to publish in pamphlet form the report of the State Board of Horticulture for the year 1885, including the proceedings of the convention, free of charge to the board and in addition to give the board 1000 copies of said report free of charge, in consideration of the privilege asked for, and on motion of Mr. Boggs the proposition was accepted by the board.

The president then suggested a course of action in regard to the preparation and examination of essays for the forthcoming report, when on motion the board adjourned to 4:30 P. M.

The board convened at 4:30 P. M., President Cooper in the chair, and all the members of the morning session present. The president called the meeting to order, when Mr. Wilson moved to declare the office of Inspector of Fruit Pests vacant, which motion was seconded by Mr. Boggs.

After a discussion of the subject the president put the question and directed the secretary to call the roll, and the members to vote as their names were called. On calling the roll the vote resulted as follows: Those voting aye were Messrs. Boggs, Kimball, Milco and Wilson. Voting nay, Cooper. Not voting, Messrs. Coronel and Chapin.

The president then declared the motion carried, and the office of Inspector of Fruit Pests vacant. On motion of Dr. Kimball, the board then adjourned to to-morrow at 2 P. M.

Saturday, 21, 1885, 2 P. M.—The board met as per adjournment. President Cooper took the chair and called the board to order. There were present Messrs. Cooper, Boggs, Coronel Kimball, Chapin, Milco and Wilson.

The president declared nominations for the office of Inspector of Fruit Pests then in order, whereupon Mr. Boggs nominated Dr. Lotspeitch, Mr. Wilson nominated Wm. M. Boggs, Dr. Kimball nominated Matthew Cooke, Mr. Coronel nominated Alexander Craw, and Dr. Chapin nominated John Britton. On motion, the nominations were then closed.

The president directed the members to prepare their ballots, and the secretary to act as teller. The first ballot resulted as follows: Dr. Lotspeitch, 1; Wm. M. Boggs, 1; Alexander Craw, 2; Matthew Cooke, 2; and Ellwood Cooper, 1.

Second ballot—Dr. Lotspeitch, 1; Wm. M. Boggs, 2; Alexander Craw, 1; Matthew Cooke, 2; and John Britton, 1.

Third ballot—Wm. M. Boggs, 3; Alexander Craw, 1; Matthew Cooke, 2; and John Britton, 1.

Fourth ballot—Wm. M. Boggs, 3; Alexander Craw, 2; and Matthew Cooke, 2.

Fifth ballot—Wm. M. Boggs, 3; Alexander Craw, 1; Matthew Cooke, 2; and John Britton, 1.

Sixth ballot—Wm. M. Boggs, 4; Matthew Cooke, 2; and John Britton, 1.

Whereupon the president declared that Mr. Boggs, having received a majority of all the votes cast, was duly elected to the office of Inspector of Fruit Pests.

On motion of Dr. Kimball the board adjourned. A. H. WEBB, Secretary.

The Fruit Pest Law.

An Act to prevent the spreading of fruit and fruit tree pests and diseases, and to provide for their extirpation (approved March 9th, 1885). —The people of the State of California, represented in senate and assembly, do enact as follows:

SEC. 1. It shall be the duty of every owner, possessor or occupier of an orchard, nursery, or land where fruit trees are grown within this State, to disinfect all fruit trees grown on such lands infested with any insect or insects, or the germs thereof, or infested by any contagious disease known to be injurious to fruit or fruit trees, before the removal of the same from such premises for sale, gift, distribution, or transportation. Fruit boxes which have been used for shipping fruit to any destination are hereby required to be disinfected previous to their being again used for any purpose; all boxes returned to any orchard, storeroom, salesroom, or any place used or to be used for storage, shipping or any other purpose, must be disinfected within three days after their return; and any and all persons failing to comply with the requirements of this section shall be guilty of misdemeanor. All packages, known as free packages, must be destroyed or disinfected before being again used.

SEC. 2. It shall be the duty of the owner, lessee or occupier of an orchard within this State, to gather all fruit infested by the insects known as the codlin moth, peach moth, red spider, plum weevil, and kindred noxious insects, their larvæ or pupæ, which has fallen from the tree or trees, as often as once a week, and dispose of and destroy the same in such a manner as to effectually destroy all such insects, their larvæ or pupæ. It shall be the duty of the Inspector of Fruit Pests, or the quarantine guardian, to inspect fruit packages, and all trees and plants, cuttings, grafts and scions, known or believed to be infested by any insect or insects, or the germs thereof, or their eggs, larvæ or pupæ, injurious to fruit or fruit trees, or infested with any disease liable to spread contagion, imported or brought into the State from any foreign country, or from any of the United States or Territories, and if upon inspection such fruit or fruit packages are found to be infested or infected, it shall be a misdemeanor to offer the same for sale, gift, distribution or transportation unless they shall be first disinfected.

SEC. 3. Every person shipping fruit trees, scions, cuttings, or plants, from any orchard, nursery, or other place where they were grown or produced, shall place upon or securely attach to each box, package, or parcel containing such fruit trees, scions, cuttings, or plants, a distinct mark or label, showing the name of the owner or shipper, and the locality where produced. And any person who shall cause to be shipped, transported, or removed from any locality declared by the State Board of Horticulture to be infested with fruit trees or orchard pests, or infected with contagious diseases injurious to trees, plants, or fruits, unless the same shall have been previously disinfected, shall be guilty of a misdemeanor. Disinfection shall be to the satisfaction of the State Board of Horticulture, or the Inspector of Fruit Pests. When disinfected, the fact shall be stamped upon each box, package, or separate parcel of fruit trees, scions, cuttings, or plants; and any person who shall cause to be shipped, transported, or removed, any such box, parcel, or package, from a quarantine district or locality, not bearing such stamp, shall be guilty of a misdemeanor, and may be punished by fine, as provided in Sec. 6 of this Act. Any person who shall falsely cause such stamp to be used, or shall imitate or counterfeit any stamp or device used for such purpose, shall be guilty of a misdemeanor.

SEC. 4. It shall be the special duty of each member of the State Board of Horticulture to see that the provisions of this Act are carried out within his respective horticultural district, and all offenders duly punished.

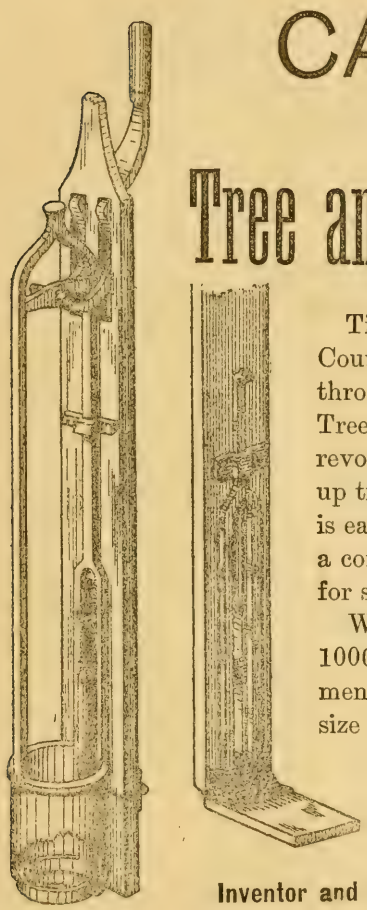
SEC. 5. All fruit trees infested by any insect or insects, their germs, larvæ or pupæ, or infected by disease known to be injurious to fruit or fruit trees, and liable to spread contagion, must be cleaned or disinfected before the first day of April 1885, and on or before the first day of April of every succeeding year thereafter. All owners or occupants of lands on which fruit trees are grown failing to comply with the provisions of this section, shall be guilty of a misdemeanor, and fined as provided for in section six of this Act. All fruit, packages, trees, plants, cuttings, grafts and scions that shall not be disinfected within 24 hours after notice by the Inspector of Fruit Pests, or a duly appointed quarantine guardian, or any member of the Board of Horticulture, shall be liable to be proceeded against as a public nuisance.

SEC. 6. Any person or corporation violating any of the provisions of this Act, shall be deemed guilty of a misdemeanor, and shall, on conviction thereof, be punished by a fine of not less than $25 nor more than $100 for every offense.

FOUND AT LAST!

Just the Thing for Nurserymen.

THE MOST COMPLETE AND PRACTICAL DEVICE OUT.



CARROLL'S

PATENT

Tree and Plant Transplanter.

Timothy Carroll, of Anaheim, Los Angeles County, has invented, and obtained patents through Dewey & Co.'s Patent Agency, for a Tree Transplanter that is destined to work a revolution in the old-fashioned methods of taking up trees for transplanting. It works to a charm; is easily handled; anyone can use it. It leaves a compact mass of earth around the roots, ready for sacking to ship or to set out.

With this device one man can easily take up 1000 trees in a day. With the large size two men can take up 2000 trees, and with the small size 3000 trees per day.

FOR PARTICULARS, ADDRESS

Timothy Carroll,

Inventor and Patentee, ANAHEIM, LOS ANGELES CO., CAL.

ANAHEIM EVERGREEN NURSERIES

200 Yards West of Railroad Depot,

Anaheim, Los Angeles Co., Cal. **TIMOTHY CARROLL, Proprietor.**

EVERGREEN TREES A SPECIALTY.

All Trees in boxes taken up with Transplanter, and ready to set. No Trowell or knife needed. Each plant separate and ready to set.

"THE RIPE FRUIT CARRIER."

Similar to the Egg Carrier, but Ventilated, Adjustable, etc.

IS TRUE TO NAME,

For in it RIPE Oranges, Peaches, Pears, delicate Apples, Tomatoes, Japanese Persimmons, Figs, Etc., are conveyed in perfection.

ALL WRAPPING, DRYING-HOUSES, SIZING MACHINES, Etc., are DISPENSED WITH.

IT CLASSES THE FRUIT, MAKES IT UNIFORM THROUGH THE CRATE, and, each specimen being in a cell to itself, acts as a brace; so that a slatted crate is strong and stable, even with lighter head pieces than are used in ordinary packages.

ORANGE CRATE

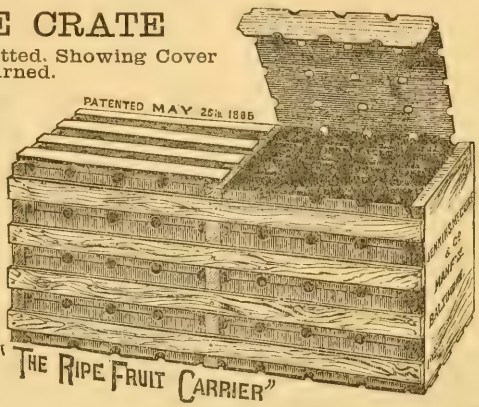
With One End Unslatted, Showing Cover Upturned.

Contains 8 Fillers and Two Covers.

Fillers made with Cells of any size.

FRUIT MUST FIT TIGHTLY IN CELL.

PRICE OF FILLERS, **$27.50 per 1,000,** including 250 Covers, making 125 Cases, holding 200 bushels.



Bushel Crates are recommended for all Fruits except Oranges, and can be made at home of three-quarter or inch plank, and common laths.

(We also recommend that Every Shipper or Packer put his own address on every package.)

☞ "THE RIPE FRUIT CARRIER" has conveyed RIPE Tomatoes more than 1,000 miles in perfect order they remain so more than 10 days after delivery. And IN IT ONLY have RIPE Peaches been successfully shipped from the United States to Europe WITHOUT ICE.

☞ SEND FOR CIRCULAR AND PROOF.

JENKINS, McGUIRE & CO.,

BALTIMORE, UNITED STATES.

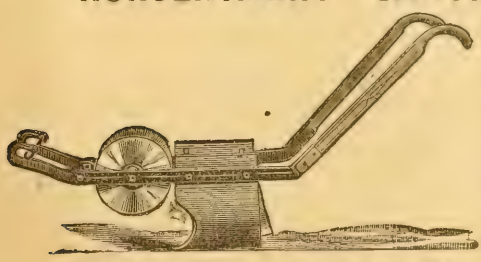
GRAPE VINE TWINE,

Made Especially for Tying up Grape Vines. Put up in 4-lb. Balls.

TUBBS & CO.,

611 & 613 Front St., San Francisco.

NURSERYMEN! WHITNEY'S TREE DIGGER.



One of the most important labor and time-saving implements that inventive genius has enabled the Nurseryman to call to his assistance is the TREE DIGGER.

The machine will do the work of twenty men, and do it better, quicker, and more satisfactorily, getting better and more roots than is possible with a spade. The roots are smoothly cut (not haggled with a spade), and of an even length, which makes packing into cases and bales much easier and more economical. For sale by

Hawley Bros. Hardware Co., Sole Agents for California.

Adriance "Buckeye" Mowers and Reapers. Hodge's Headers. Perkins' Windmills, Etc.

SEND FOR CATALOGUE.

Windmills, Horse-Powers, Tanks, Pumps,

—AND ALL KINDS OF—

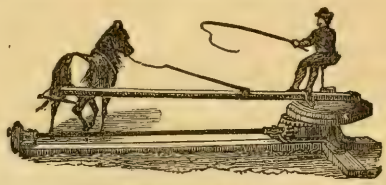
PUMPING MACHINERY.

Manufacturing Works and Office:

51 Beale Street, SAN FRANCISCO, CAL.

F. W. KROGH & CO.,

Inventors, Patentees, Manufacturers and Sole Proprietors.



SEND FOR ILLUSTRATED CATALOGUE & PRICE LIST.

STENCIL PLATES
(AND)
BURNING BRANDS
— MADE BY —
A. E. RIDLEY & CO.

BRUSHES, INKS, POTS &c.

FOR SALE

323 FRONT St SAN FRANCISCO.

FRUIT GROWERS, ATTENTION!

Orchard and Vineyard Singletree.

Is a sure preventive against damage to Trees or Vines by careless driving, and will save its cost every day it is in use, besides relieving all anxiety for the safety of the bark. A glance at the accompanying illustration fully explains the principle of this new and novel Singletree.

Any common set of wagon traces can be used, which are hitched to a hook, and passing through a loop of iron (open at bottom to facilitate hitching) around the end of a Singletree, they furnish the protection so much needed in plowing an orchard. To see one will convince the most skeptical that for simplicity and effectiveness this Singletree is the best made.

Made out of Best Seasoned Hickory. Price, $1 each, or $12 per dozen. FOR SALE by all Country Dealers, or

J. T. RICHARDSON,

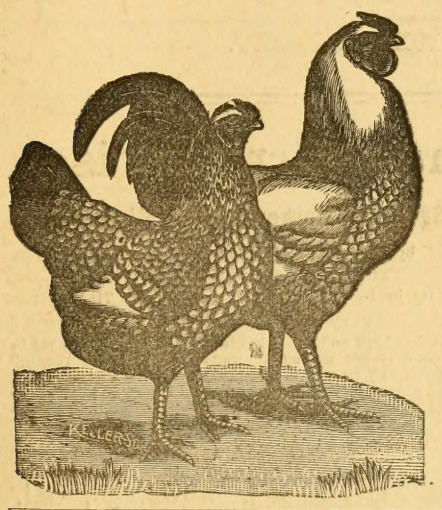
Dealer in Agricultural Implements,

235 and 237 N. Los Angeles St., Los Angeles, Cal.

FRUIT DRIER ON EXHIBITION.

One of the Meeker Sun Fruit Driers, with all the latest improvements suggested by the experience of last season, is now on exhibition at the factory, 5th and Bryant streets, on and after Monday, January 25th.

As now arranged we consider it much the most perfect and economical of any of the various Driers to which the attention of fruit-growers has been called. Its various productions are the perfection of purity and excellence, and at the same time the most economical in cost of production. Fruit-growers are invited to examine and test the Drier and the fruit prepared in it. Those using this drier last season realized handsome profits on their fruit.



GEORGIA STREET

POULTRY YARD,

18 Georgia St., Los Angeles,

JAS. T. BROWN, Proprietor.

PRICE LIST OF BIRDS AND EGGS:

Kind of Fowl.	Eggs.	Price.	Eggs.	Price.	Eggs.	Price.
Plymouth Rock	13	$3 00	26	$5 00	65	$10 00
Brown Leghorn	13	3 00	26	5 00	65	10 00
White Leghorn	13	3 00	26	5 00	65	10 00
Houdan	13	3 50	26	6 00	65	12 50
W. F. Black Spanish	13	3 50	26	6 00	65	12 50
Croad Langshans	13	3 50	26	6 00	65	12 50
Light Brahmas	13	3 50	26	6 00	65	12 50
S. S Hamburgs	13	3 50	26	6 00	65	12 50
Black Hamburgs	13	3 50	26	6 00	65	12 50
Bronze Turkeys	9	4 00	18	7 00	..	.....

☞ Single Birds, from $3 to $8. Birds, per pair, from $5 to $12. Trios, from $10 to $20.

R. J. TRUMBULL. CHARLES W. BEEBE.

R. J. TRUMBULL & CO.,

GROWERS, IMPORTERS

.....AND DEALERS IN.....

SEEDS, TREES AND PLANTS,

419 and 421 Sansome Street,

Between Clay and Commercial, SAN FRANCISCO, CAL.

ESTABLISHED 1863.

THOS. MEHERIN,

FLOWER SEEDS. FRUIT TREES.

Importer, Wholesale and Retail Dealer in

Seeds, Trees AND Plants

A Large Stock of AUSTRALIAN PERENNIAL RYE GRASS at Reduced Rates.

EVERGREEN MILLET, ALFALFA, RED AND WHITE CLOVER,

Timothy and Orchard Grass, Kentucky Blue Grass, Hungarian Millet Grass, Red Top, etc. Also a Large and Choice Collection of

FRUIT AND ORNAMENTAL TREES,

BULBS, ROSES, MAGNOLIAS, PALMS, Etc., AT REDUCED PRICES.

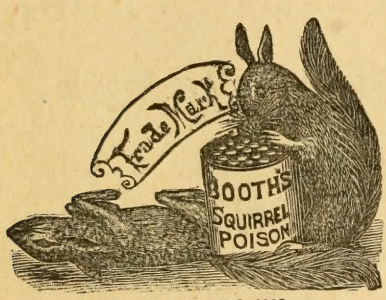
☞Budding and Pruning Knives, Greenhouse Syringes, Hedges and Pole Shears.

(P. O. Box 2059. THOS. MEHERIN, 516 Battery St., S. F.

☞Price List Mailed on Application.☜

AGENT FOR R. D. FOX'S NURSERY.

Booth's Sure Death Squirrel Poison



Patented Jan. 23d, 1883.

For Sale by all Wholesale and Retail Dealers.

For Squirrels, Gophers, Birds, Mice, Etc.

☞Endorsed by the Grange and Farmers wherever used.☜

The Cheapest and Best.

Put up in 1-pound, 5-pound, and 5-gallon Tins.

Every Can Warranted.

This Poison has been on the market less than two years, yet in this short time it has gained a reputation of "Sure Death," equaled by none. By its merits alone, with very little advertising, it is now used extensively all over the Pacific Coast, as well as in Australia and New Zealand.

SEND FOR TESTIMONIALS.

MANUFACTURED BY

A. R. BOOTH, San Luis Obispo, Cal.

Special Terms on Quantities in Bulk.

SAMUEL BRECK,

SUCCESSOR TO

Geo. F. Silvester,

IMPORTER AND DEALER IN

SEEDS.

GARDEN and VEGETABLE SEEDS,

Alfalfa, Timothy, Red and White Clover, Millet, Flax, Red Top, Blue Grass, Lawn Grass, Orchard and Rye Grass, Bird Seeds, etc. Imported Red and Blue Gum and French Mangel Wurzel and Sugar Beet Seed.

No. 317 WASHINGTON STREET, SAN FRANCISCO, CAL.

CARBOLIC SHEEP WASH, 80 Per Cent Strong.

POWDERED CAUSTIC SODA, 10-Pound Tins, 98 Per Cent Strong.

—For Sale by—

T. W. JACKSON & CO., Manufacturing Agents,

304 California Street, San Francisco, Cal.

HAAS BROS.,

100 & 102 CALIFORNIA STREET.

Importers and Wholesale

GROCERS,

SAN FRANCISCO.

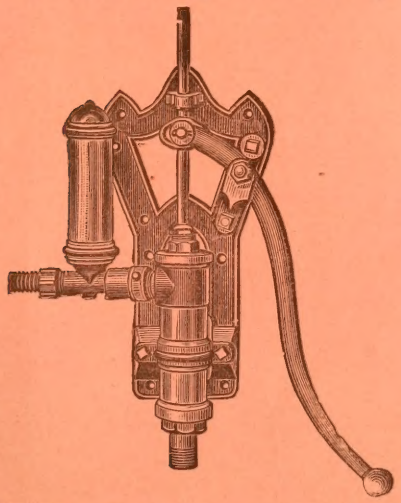
SOLE AGENTS ON THE PACIFIC COAST FOR

AMERICAN LYE COMPANY'S LYE.

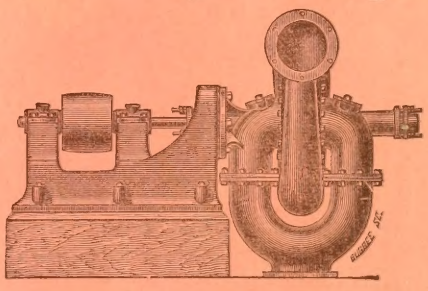
Webber's High Class Centrifugal Pumps.

GREGORY'S

Spraying Pump.



The above represents the ONLY Pump which has been adopted by the State Horticultural Society. It is of CALIFORNIA manufacture and entirely different **internally** from a light Eastern Pump which resembles it very closely **externally.** The GREGORY Pump is the only one which will stand the corrosive action of the alkalies in the various insecticide mixtures.



These Pumps are designed for water supply, Irrigating and Draining land, and all places where a large body of water has to be elevated to a moderate hight quickly, cheaply and effectively.

It is absurd to presume that the same pump will do equally good work at high or low lifts; therefore, several varieties of these pumps are manufactured, especially constructed for the hight the water is to be raised and the work required.

The Webber is unquestionably the HIGHEST CLASS CENTRIFUGAL PUMP IN THE WORLD.

☞ Send for full Illustrated Catalogue and Price List to the Pacific Coast Agents.

H. P. GREGORY & CO.

2 and 4 California Street, S. F.

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JAN 28 1911

JUST WHAT I'VE BEEN LOOKING FOR!

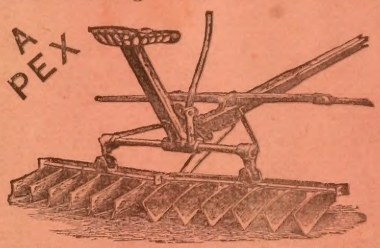
NEW BRADLEY VINEYARD PLOW,

Price, with one extra share, **$15.00.** Especially adapted for cultivation of VINEYARDS and ORCHARDS. This is one of the latest things out, and is the most complete tool of its kind in the market. It has crooked standard and shifting handle, so that it can be run close under the vines without breaking or injuring them. There has been a large number placed in California during the past season and all

Gave the Best of Satisfaction.

APEX HARROW.

The Best Tillage Tool. Indestructible.



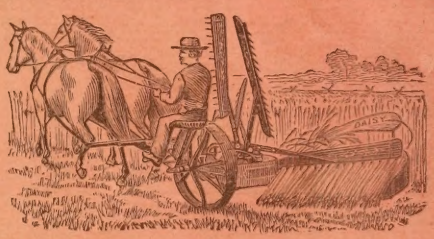
THE BEST FOR VINEYARDS AND ORCHARDS. It saves the use of a plow. Every one guaranteed. Sent on trial, if not satisfactory may be returned. **Price, $40.00.**

NEW McCORMICK No. 2 MOWER.

The Best in the World!

4½ Feet Cut.....$ 90 00
4½ Feet Cut..... 100 00

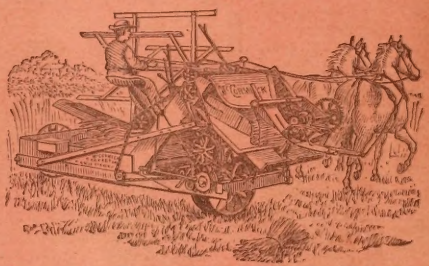
THEY LEAD THE WORLD!



McCormick Daisy Reaper.

CANNOT BE EXCELLED.

5 Feet Cut.....$175 00



New McCormick Steel Binder.

IMPROVED FOR 1886.

6 Feet, $250 00.....7 Feet, $260 00

MILBURN HOLLOW IRON AXLE WAGON.

Lightest, Strongest and Cheapest Wagon in the World.

☞ Agents for David Bradley Manufacturing Company. A full stock of Plows, Cultivators and Harrows on hand. Also, a full line of Extras. Orders will have prompt attention.

Address: TRUMAN, ISHAM & HOOKER, 421 to 427 Market Street, S. F., Cal,